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2003 Environmental Performance ) Docket No.  
Report ) 02-IEP-01  
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TUESDAY, JULY 8, 2003

9:45 A.M.

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

COMMISSIONERS PRESENT

James Boyd, Presiding Member

William Keese, Chairman, Associate Member

John Geesman, Commissioner

ADVISORS PRESENT

Susan Bakker, Advisor to Commissioner Boyd

Chris Tooker, Advisor to Commissioner Geesman

STAFF PRESENT

Kevin Kennedy

Jim McKinney

Ron Wetherall

Matt Layton

Natasha Nelson

Dick Anderson

Bob Haussler

Eileen Allen

David Abelson

Jim Woodward

Nancy Hanson

Dale Edwards

ALSO PRESENT

Teresa DeBono

Pacific Gas and Electric Company

Steven Kelly

Independent Energy Producers Association

ALSO PRESENT

H.I. Bud Beebe  
Sacramento Municipal Utility District

Bill Powers  
Powers Engineering  
Border Power Plant Working Group

Pete Bell  
California Hydropower Reform Coalition

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## P R O C E E D I N G S

9:45 a.m.

PRESIDING MEMBER BOYD: I think having solved the chair logistics problem we're ready to begin. Good morning, everybody. Welcome to today's workshop, one in a continuing series of workshops it feels like, to some of us, and to most of us, probably.

This on the environmental performance of California's power system. This is, as I indicated, part of a continuing series of public forums that we've held over several months now that will continue through this summer and into the fall, in support of development of the Energy Commission's integrated energy policy report.

I'm Commissioner Jim Boyd, Presiding Member of the IEPR, as we call it, Committee. I'm joined up here today by Chairman Keese, who's the Second Member of this Committee. And we're also joined by Commissioner Geesman, who has a special interest in this subject. And we welcome him to this proceeding.

Any one of us wearing any one of our many hats of Members or Chair of various committees get involved in this process. So any

1 one of the Commissioners can and will, and are  
2 welcome to join us in these hearings and  
3 throughout the process.

4 The IEPR Committee was established to  
5 preside over the proceedings in preparation of  
6 this report, as required under the mandates of  
7 Senate Bill 1389 by Senators Bone and Sher.

8 In that legislation the Legislature  
9 found that it's the responsibility of state  
10 government to insure a reliable supply of energy  
11 is maintained at levels consistent with the need  
12 to protect public health and safety, welfare and  
13 environmental quality.

14 The Integrated Energy Policy Report is  
15 designed to identify emerging trends related to  
16 energy supply, demand, conservation and public  
17 health and safety; and provide eventually a basis  
18 for state policy and state actions.

19 The Commission is required to submit the  
20 report to the Governor and Legislature by  
21 November, and every two years thereafter. And, as  
22 indicated, we are conducting a number of public  
23 workshops on different energy-related subjects  
24 that will be considered for preparation of this  
25 report.

1           The purpose of workshops, like all  
2       workshops, is to present the findings and analyses  
3       from our staff to us and to the public; to solicit  
4       public comments and technical feedback; and to  
5       combine them to establish a factual record that  
6       will inform first the Committee, and then the  
7       Commission on related energy policy choices.

8           As indicated, we've already held a  
9       number of workshops that address such subjects as  
10      world oil issues; electricity efficiency  
11      opportunities; hydropower systems; air emissions  
12      and public health; electricity and natural gas  
13      infrastructure; supply and demand; and  
14      considerations associated just with the general  
15      subject of energy use in California.

16          Again, today's topic is environmental  
17      performance of California's electric system. Our  
18      electric system, as many have learned over the  
19      past couple years, is diverse; it's very complex.  
20      It includes natural gas plants of all vintages;  
21      nuclear plants; hydro systems; wind; solar and  
22      geothermal generation. And power plants of these  
23      types are distributed throughout the state.

24          The system includes the natural gas  
25      pipeline system that delivers the fuel, as well as



1 the electrical transmission system that  
2 distributes the end product. It also includes  
3 electricity imported from out of the state and out  
4 of the country. It is truly an integrated system.

5 The Commission has direct permitting  
6 jurisdiction over just a small part of our  
7 electric system, thermal and geothermal power  
8 plants 50 megawatts and greater, and the immediate  
9 supporting infrastructure.

10 For the rest of the system, including  
11 thermal plants built before the Energy Commission  
12 was established, our job is to collect, address  
13 and present information for the public, for the  
14 Legislature, for the Governor and for fellow  
15 agencies, stakeholders and the general public on  
16 all of these issues.

17 We seem to be turning a corner on power  
18 plant emissions. The next challenge is to go  
19 beyond the traditional air emissions concerns and  
20 understand the environmental and societal effects  
21 of all parts of our electricity system. The  
22 impact to human health. Urban, suburban and rural  
23 human communities and diverse parts of the  
24 environment vary throughout our state, our small  
25 state of roughly 35 million people now.

1           For example, impacts to fish in a river  
2           from hydropower are different from impacts to  
3           farmland from transmission lines. Impacts to  
4           water supplies in the Central Valley area  
5           different from air emissions in the Los Angeles  
6           air basin.

7           Impacts to urban communities with  
8           concentrations of industrial infrastructure are  
9           different from effects to suburban and rural  
10          communities. And as I'm always wont to say, there  
11          is no middle of nowhere in California anymore.  
12          There are people everywhere.

13          What are the energy environmental issues  
14          over the next decade that various public and  
15          private players in the power generation section  
16          will have to address? Global warming, which this  
17          Commission is addressing on a regular basis.  
18          Competing use of water supplies, a growing issue  
19          of concern. Impacts to aquatic ecosystems.  
20          Competing land use for new renewable energy  
21          generation and the transmission needed to connect  
22          them to the grid. Whether to repower or relicense  
23          and continue using aging thermal, hydro and  
24          nuclear facilities or to retire them. And how do  
25          we think about imported power.

1 I'm sure many of those here today will  
2 have other issues to add to this list; and I hope  
3 you can raise them over the course of the day.

4 That being said I'd like to turn first  
5 to Chairman Keese and Commissioner Geesman, and  
6 then to the Energy Commission Staff and hear about  
7 the findings of their recent studies.

8 As I said, we want to hear your views  
9 and your comments on what the staff has prepared,  
10 and your views and issues or recommendations that  
11 you believe should be part of our report series.

12 Kevin Kennedy and Jim McKinney will  
13 provide an overview of today's workshop. Kevin  
14 will moderate today's discussion and Jim will  
15 present the general issues and conclusions of the  
16 2003 Environmental Performance Report.

17 Before turning the microphone over to  
18 Kevin and Jim, I'd like to call on Chairman Keese  
19 and Commissioner Geesman for any comments they'd  
20 like to make.

21 CHAIRMAN KEESE: Thank you. I really  
22 don't have anything to add to your prefatory  
23 remarks. I would just use the word integrated,  
24 and our effort that we will be coming up with an  
25 integrated report by November that will tie in

1       this issue with other issues, and tie in the  
2       interests of all state agencies hopefully with  
3       other state agencies.

4               And so I would ask people who make  
5       comments today to remember that we really don't  
6       want to discuss this issue isolated. It's got to  
7       relate to how we're doing our other analyses in  
8       electricity, gas, fuels, et cetera.

9               PRESIDING MEMBER BOYD: Commissioner  
10       Geesman, any comments?

11              COMMISSIONER GEESMAN: I would commend  
12       the staff on preparation of an excellent document.  
13       In coming on the Commission almost a year ago I  
14       found the 2001 report to be among the most  
15       illuminating preparatory documents that I  
16       reviewed.

17              I will say I am disappointed that in  
18       this update of that report budgetary  
19       considerations and resource constrains in the  
20       press of other priority work have not allowed as  
21       much advancement in our analysis as I would like  
22       to see.

23              I've got a number of questions as you go  
24       through your presentations. But let me summarize  
25       the general theme, and that is that I don't find

1 statewide averages to be as illuminating of issues  
2 in front of this Commission and other state  
3 policymakers as a more localized analysis.

4 I do think that it is within our grasp  
5 to address these questions in the geographic areas  
6 where they impact the public and the environment  
7 most directly. And I think that would be a  
8 preferable method of analysis than framing  
9 questions in a more generic style.

10 But I will say I do think it is an  
11 excellent piece of work and does represent an  
12 advancement from the 2001 analysis.

13 Thank you.

14 PRESIDING MEMBER BOYD: Thank you, and  
15 Commissioner Geesman and his comments remind me of  
16 the fact that in my introduction I was very  
17 painfully clear to indicate that this is a report  
18 about the electric generation facilities, because  
19 that's what 1389 called upon this agency to do, to  
20 include the environmental performance of the  
21 electric generation facilities of the state as  
22 part of the IEPR.

23 Discussions we've had internally, and  
24 discussions we've had in other forums, one would  
25 hope that the Integrated Energy Policy Report,

1       itself, could address, and will someday address,  
2       the whole breadth of environmental issues  
3       associated with energy and all the facets of  
4       energy that we will be dealing with in that  
5       report, namely electricity and natural gas and  
6       transportation fuels.

7               And I know that staff is doing  
8       everything in their power to address all those  
9       within all the constraints that have been  
10      indicated.

11             So when we actually do the final  
12      Integrated Energy Policy Report, I'm sure we will  
13      try to address the environmental issues associated  
14      with all the aspects of the production and use of  
15      energy in this state.

16             With that, Kevin, let me turn it over to  
17      you.

18             MR. KENNEDY: Thank you, Commissioners,  
19      Chairman. My name is Kevin Kennedy; I'm the  
20      supervisor of the special projects unit within the  
21      siting division here at the Energy Commission.

22             Jim McKinney and I served, in effect, as  
23      tag-team project managers for the preparation of  
24      dispersion of the environmental performance  
25      report. And for today I'm essentially going to be

1 just playing moderator, trying to make sure that  
2 we get some good discussion going on the various  
3 topics that will be presented.

4 And with that, I will turn it over to  
5 Jim for introductory remarks.

6 First we're going to rearrange the  
7 tables a little bit so the Commissioners are not  
8 quite so jammed over there.

9 PRESIDING MEMBER BOYD: We're okay.

10 (Pause.)

11 MR. McKINNEY: Can you hear me okay with  
12 this mike? Can you hear me in the back? Okay,  
13 thanks.

14 Welcome, everybody. As Kevin said, Jim  
15 McKinney, Co-Project Manager for the 2003  
16 Environmental Performance Report of California's  
17 electrical generation system.

18 Let me get set up here.

19 (Pause.)

20 MR. McKINNEY: Okay, what I'd like to do  
21 with my remarks this morning is just kick us off  
22 and help situate, you know, what is the  
23 Environmental Performance Report; why are we doing  
24 it; what are we trying to accomplish; and then  
25 where do we go from here.

1           So, first of all, we have a lot of  
2           acronyms we're using this year because 1389 is a  
3           new piece of legislation, which is the Integrated  
4           Energy Policy Report that Commissioner Boyd spoke  
5           of. So the Environmental Performance Report is  
6           actually a sub-report to something called the  
7           Electricity and Natural Gas Report. And Al  
8           Alvarado and Ross Miller, I don't know if they're  
9           here, but they are project managers of that  
10          element.

11                 That is one of the three main legs on  
12          the stool that will form the Integrated Energy  
13          Policy Report.

14                 So in terms of scheduling we are asking  
15          that the public provide any comments back to us on  
16          the environmental performance report by July 14.  
17          And I know that's not very much time. We  
18          apologize, but we really do welcome comments and  
19          input. We want to make this as good a report as  
20          we are able, given the staff resources and the  
21          data resources that we have.

22                 And the final for EPR will be produced  
23          on August 4th. For the Electricity and Natural  
24          Gas Report the draft will be out August 8; and  
25          then we'll have hearings August 26th and 27th.



1 The Integrated Energy Policy Report draft will be  
2 released on September 5. Then hearings will be  
3 held throughout the state between September 30th  
4 and October 5th. And the actual policy report,  
5 itself, will be sent to the Governor's Office on  
6 October 31st.

7 Initially we had a piece of legislation  
8 called SB-110 that directed us to provide an  
9 environmental assessment on the performance of the  
10 state's electrical generation system. And we did  
11 the first one of those in the 2001 biennial report  
12 series to the Legislature and Governor to inform  
13 them on the suite of environmental issues  
14 associated with power generation in the state.

15 Status and trends in the environmental  
16 performance, that's one of the goals that we try  
17 to do. Some of the things that the legislation  
18 calls out is to identify geographic distribution  
19 of the environmental impacts. So, air, water,  
20 wildlife habitat and socioeconomic effects. And  
21 although it does say geographic distribution, as  
22 Commissioner Geesman has reminded us, it's quite  
23 challenging, really, doing that for a state as  
24 large and diverse as California. So this time  
25 around we will be looking at state-level averages,

1 but we know that's not where we need to go.

2 One of the other things I've called out  
3 specifically in the legislation is this notion of  
4 displacement. And I think the theory there is  
5 with deregulation in 1996, with all the  
6 anticipated new investment, capital investment in  
7 generation facilities, what would that do? Would  
8 that displace older generation, turbines and  
9 boiler units?

10 The report goals that we set for  
11 ourselves for 2003. One is really to provide a  
12 factual analytic basis for any environmental  
13 policy recommendations that might be carried  
14 forward by the Commission to the Legislature and  
15 the Governor's Office.

16 We also wanted to establish a 1996  
17 baseline. The first report we did was a very  
18 broadbrush look at environmental performance  
19 trends from the post-war era, when really our  
20 current energy infrastructure matured in  
21 California. And look at that from say the early  
22 '50s to the end of the century.

23 Our goal now is to really set a  
24 quantified environmental baseline so we can track  
25 the trends, you know, in each of the key subject

1 areas that we will be talking about later today.

2 We also felt it was important to really  
3 think of our system as an integrated system, so  
4 that includes the pipelines that bring the fuel  
5 in, as Commissioner Boyd stated, and the electric  
6 transmission system that moves the electrons  
7 around to where they're ultimately needed.

8 We also have a brief overview of the  
9 energy crisis and any environmental issues related  
10 to that.

11 So what is environmental performance?  
12 It's not a word that gets used a lot. And this is  
13 the way we have broken it down. And I'll kind of  
14 highlight the parts that we think do a good job  
15 on, and those parts that we can do a better job  
16 on.

17 First, with classic power generation  
18 systems, thermal efficiency, converting coal, oil,  
19 natural gas to heat and then power. So thermal  
20 efficiency is the rate at which the fuel content  
21 is transferred to heat and then to electricity.  
22 And that ties directly to how much air emissions  
23 do you get per unit of fuel input; how much water  
24 is needed to cool the system. And that's driven  
25 mostly by technology and fuel prices.

1           Then we have the environmental  
2   discharges. This is how much tons of stuff goes  
3   into the air. How many gallons, millions of  
4   gallons, acrefeet of water get used in a power  
5   plant system. How many acres of land; what type  
6   of land; what type of habitat. We really have  
7   been working hard to quantify that. I think  
8   that's something that we do pretty well.

9           There's also the rates of change in  
10   these discharged. What does that look like over  
11   time and how does that vary by generation  
12   technology and by the generation sector. And I  
13   think we're also doing a pretty good job on that  
14   one.

15           Discharges ultimately are driven by  
16   pollution controls, which are, in turn, a function  
17   of the science that we bring to understand what  
18   the effects are; the technologies that are  
19   available; the regulations that are constantly  
20   evolving to keep up with the science and  
21   understanding of the environmental quality  
22   effects.

23           I want to distinguish between  
24   environmental quality effect and environmental  
25   discharge. Environmental quality effect is the

1 impact that these discharges, series of  
2 discharges, not just in the power sector, but from  
3 all pollutant inputs into a given air basin, a  
4 watershed, a river system, habitat type.

5 We know that's where we want to go and  
6 need to go, I think, to really illuminate what's  
7 the contribution of the energy sector to  
8 environmental quality in California. That's very  
9 data-intensive and it's labor-intensive, and it  
10 requires some analytic tools that we don't really  
11 have yet. But that is one of the goals, is to  
12 really understand what's the contribution of the  
13 energy sector to environmental quality in  
14 California.

15 Most of what we're going to talk about  
16 today is what are the impacts -- not impacts,  
17 discharges, the loading to the system from power  
18 production, transmission, gas. So that's pretty  
19 much where we have to leave it.

20 Environmental efficiency is a newer  
21 concept. But the notion is to try to understand  
22 across technology comparisons, across tech sector  
23 comparisons. So what is the unit of environmental  
24 impact per unit of energy that's generated. So  
25 what are the impacts to fish in a river per, you

1 know, that megawatt, that megawatt hour of  
2 ancillary services power or baseload power that  
3 may come from a hydro system. How do you compare  
4 that to x tons of NOx emissions in an urban air  
5 basin. We want to be able to try to understand  
6 that better, and environmental efficiency is a  
7 tool that will help us get there.

8 As talked about, our approach already  
9 somewhat, so again much to the chagrin of our  
10 Commissioner today, we are looking at state level  
11 discharges and emissions. We're breaking it up on  
12 media and the generation sector. So we're really  
13 trying to look at total amounts of inputs of  
14 loading into the system for various pollutants.  
15 The rates have changed in how those pollutants are  
16 done.

17 And one shorthand way to call this is  
18 the footprint of a system, which is the current  
19 footprint.

20 Trends in thermal efficiency. That's  
21 something that Ron Wetherall will talk to when he  
22 does his presentation. Technology and regulatory  
23 trends. We've done a good job this time around in  
24 thinking about or understanding how much of the  
25 system has SCR or selective catalytic reduction

1 technologies; how many of the new power plants use  
2 ZLD, or zero liquid discharge; how much of the  
3 hydro system has fish ladders that work properly.

4 We also will be identifying key issues  
5 in areas of concern. And as each of the staff  
6 come up and make their presentation they'll be  
7 highlighting those issues throughout their  
8 discussions.

9 What we found in 2001 is that we have a  
10 generally clean system. You think about the size  
11 of our populace and the size of our economy and  
12 the fragility of our landscape ecosystems and  
13 water systems, we have a generally clean system.  
14 And since the post-war era, when the system was  
15 early set up in the current form, the  
16 environmental trends that are broad scale have  
17 improved markedly.

18 We found that was due to changes in the  
19 technologies and fuels; the increased  
20 diversification of the system that came with  
21 PURPA; the emergence of renewables; and, of  
22 course, the big one was the advent of the  
23 environmental statutes. A big chunk of our system  
24 was built before NEPA, CEQA, the Endangered  
25 Species Act, the Clean Air Act, the Clean Water

1 Act.

2 The infrastructure that we have is a  
3 function of economics and the technology available  
4 at the time. At an earlier workshop somebody  
5 asked why do we have so many power plants on the  
6 coast. We have so many power plants on the coast  
7 because that's where they needed to be to most  
8 cheaply access the fuel oil that was used in the  
9 first part of the 1950s, the post-war era. And  
10 that's where the largest sources of cheap cooling  
11 water were available. So, ergo, we've got 21, 22  
12 power plants along the coastline now.

13 Something else that I think is somewhat  
14 unique to California is our ecology is very very  
15 diverse. We've got numerous bio-regions in the  
16 state. And within those you find lots of small  
17 habitat types and species that have evolved to  
18 adapt and survive within those little ecosystems.

19 That creates tremendous diversity; that  
20 helps out the quality of life that we enjoy here,  
21 but that also means that they're vulnerable. So,  
22 at a statewide level we may not emit a lot of  
23 emissions from the power sector, we may not use a  
24 lot of water, we may not discharge a lot of water  
25 at the aggregate state level, but at the localized



1 level if you've got sensitive populations or  
2 ecosystems that are already stressed from other  
3 sources, and you add in power sector stressors,  
4 then you can start to create havoc.

5 And then finally in 2001 we found that  
6 the primary issues of concern, areas we did not  
7 understand that we really had concerns about were  
8 impacts to water, and that's both water supply and  
9 water quality for power plant cooling, and impacts  
10 to aquatic habitats. And that is primarily once-  
11 through cooling for the coastal plants. And then  
12 in the hydropower system, impacts to fish,  
13 amphibians and the other creatures depending on  
14 those environments.

15 Generally for 2003 we think that these  
16 broad system level trends are improving and the  
17 system is getting cleaner and performing better  
18 from an environmental perspective.

19 However, there are significant regional  
20 generation sector environmental media impacts that  
21 are continuing. We think that air emissions, that  
22 we're turning the corner on that; that we really  
23 understand those. The regulatory system is  
24 working and Matt Layton will speak more to that  
25 during his presentation.

1           Impacts to water supply, water quality  
2   and aquatic habitats continue to be areas of  
3   concern. And Dick Anderson and Natasha Nelson  
4   will speak to those issues as part of their  
5   presentations.

6           The biological resource effects really  
7   vary by locale and by the part of the system. We  
8   also don't believe that the energy crisis caused  
9   major environmental effects, although there was a  
10   lot of concern about that at the time.

11          I think as I conclude my opening  
12   remarks, one of the things I want to try to impart  
13   to you is this notion of tradeoffs. Every part of  
14   our energy system impacts some part of the natural  
15   environment and of the human systems in our  
16   communities throughout the state.

17          And we've gone from the old paradigm of,  
18   you know, power generation equals air impacts, or  
19   air emissions, and that's a bad thing. That is a  
20   bad thing, but it's quite a bit more complicated  
21   here in California.

22          And this is where it gets tricky because  
23   you're balancing human health effects versus  
24   ecological effects versus societal preferences  
25   versus cost, and you need to add in reliability

1 and risk.

2 So, for example, our hydro power system  
3 is big; it's diverse; it provides about 15 percent  
4 of the power we use annually. No emissions.  
5 Extremely low cost. But it damages watersheds.  
6 And a poorly placed hydro placed hydro plant can  
7 do a lot of damage in any given river or stream in  
8 the state.

9 For repowering some of the coastal  
10 plants, and the good news is that we're getting  
11 very efficient, very low emission, state-of-the-  
12 art combined cycle turbines. That's a good thing.  
13 That is a really good thing. We're also reusing  
14 infrastructure that's already been developed, so  
15 there's cost savings there.

16 On the negative side you've got  
17 continuing concerns about cooling water impacts,  
18 and you've got the visual and aesthetics,  
19 especially the communities that have kind of grown  
20 up around some of these plants.

21 For renewables we have RPS. Again,  
22 we'll be seeing a big expansion in renewables. No  
23 emissions, that's a positive. But there's a  
24 series of impacts to biological resources, both  
25 from the siting of wind farms, new geothermal

1 facilities, and then the transmission that's going  
2 to be needed to bring that power to load.

3 And then with imports. Is that a  
4 win/win; is that a win for California and a win  
5 for the producers out of state and out of the  
6 country. Or are there some regional and  
7 international inequities that we should be  
8 thinking about.

9 For us to inform the Legislature and the  
10 Governor's Office on how we think about these  
11 tradeoffs, really what are the next set of issues  
12 coming up over the next 10 to 12 years. One of  
13 our key findings that we need better information.  
14 The environmental data that we have to work with  
15 this time around really was not set up to do the  
16 work that we're tasked to do under SB-1389. It  
17 varies quite a bit by statute and by agency.

18 So air and land use, we had really good  
19 data. I was surprised, even with air, given all  
20 the capacity we have at the air board, air  
21 district, our own agency, USEPA, getting the  
22 databases to work in a way to help us answer the  
23 questions we raised, that was not easy.

24 Land use information seems to be  
25 apparently readily available. Again, water,

1 getting information about water use, water  
2 impacts, that's a real tough one. Out-of-state  
3 data, that just varies very widely.

4 Some of the future goals that we have  
5 are to assess discharges at the air basin and  
6 watershed level. We really understand that's  
7 where we need to go. It's a question of getting  
8 the time, staff resources and the data tools to do  
9 that.

10 We want to work more closely with our  
11 fellow agencies. That's always been a part of the  
12 task under SB-110 and now SB-1389. We never seem  
13 to quite have enough time to really do that the  
14 way that feels right. We really want to develop  
15 those partnerships with our sister agencies.

16 Cumulative impacts of energy systems.  
17 Again, whether it's a bay, estuary, air basin,  
18 watershed, community area, we want to do a better  
19 job on that. And i've already mentioned the goal  
20 to improving how to look at cross-sector  
21 comparisons so we could think about impacts from  
22 new transmission versus cooling water use in the  
23 San Francisco Bay estuary.

24 One of the tools that might help us do  
25 this better is the life cycle analysis perspective

1 and methodology. That's very data intensive and  
2 takes some software that we don't have available  
3 here within our agency.

4 So that concludes my opening remarks and  
5 I will turn it back over to Kevin.

6 MR. KENNEDY: And I would just like to  
7 add a couple of initial comments. First I'd like  
8 to point out that the report that has been  
9 published is the staff draft of the Environmental  
10 Performance Report for this year. We will be  
11 publishing a revised version of that in about a  
12 month, taking input from any comments that we get  
13 on this.

14 At this stage we have not included any  
15 policy recommendations in the document. That is  
16 something that the Commissioners may be adding as  
17 this moves forward and becomes first a Committee  
18 document, and then is adopted by the full  
19 Commission.

20 One thing that we would very much like  
21 to do today, though, is to get any input or  
22 feedback that any of the attendees today have in  
23 terms of what they see as policy implications or  
24 policy recommendations.

25 The staff will be presenting based on

1 the factual and analytical data that was presented  
2 in the report, trying to raise some of the issues  
3 that may have policy implications. But I hope  
4 that the discussion that we have at the workshop  
5 will not end with that, but that we will get into  
6 some discussion of what policy recommendations,  
7 what sort of policy tradeoffs people might be  
8 interested in seeing.

9 Before we get into the first speaker are  
10 there any just general comments or input that  
11 people would like to have before we get into the  
12 individual topic areas?

13 Okay. The first topic that we're going  
14 to have is an overview of the electricity system.  
15 Ron Wetherall will be presenting that. This  
16 provides not so much directly any information on  
17 the environmental performance of the electricity  
18 sector, but instead provides a lot of the basic  
19 information about how the system works that  
20 becomes very important for the analysis that  
21 follows.

22 So, with that, once we get it set up, I  
23 will turn it over to Ron.

24 MR. WETHERALL: Can you hear me in the  
25 back? Okay.

1 (Pause.)

2 MR. WETHERALL: Okay, my name is Ron  
3 Wetherall and I'm with the electricity analysis  
4 office. I'm here to talk about California's  
5 electricity system.

6 California's electricity system is one  
7 of the largest and most diverse in the United  
8 States. We get our power from a variety of areas  
9 within California, as well as neighboring states,  
10 California, Mexico and Canada.

11 I thought we'd talk a little bit about  
12 some fundamentals. In the electricity system we  
13 have a system operator that provides the dispatch  
14 of resources. We have generators; we have  
15 transmission lines and transmission system, which  
16 is controlled by the system operator and owned by  
17 the IOUs and munis. Then there's the distribution  
18 system which is maintained and operated by local  
19 and electric companies like SMUD, PG&E and the  
20 City of Vernon, et cetera.

21 California has a wide variety of sources  
22 of generation. We have merchant generators; those  
23 are generators that purchased power plants from  
24 utilities back in 1997/98 when the electric system  
25 was restructured. Qualified facilities; municipal



1 utilities own generation, as well as retained  
2 generation by the regulated utilities. And of  
3 course, there's federal and state government  
4 projects such as Hoover Dam and the State Water  
5 Project.

6 And then there's imports from other  
7 states, as I mentioned, Mexico and Canada.

8 The final category is self generators,  
9 people like oil companies that use a lot of  
10 electricity on their own and sell some of it back  
11 to the grid.

12 This chart shows the ownership. As you  
13 can see in the red there the merchant class is the  
14 largest, own the largest share of California's  
15 generation. The munis and the IOUs are the next  
16 largest, followed by the QFs and then the other  
17 categories.

18 California enjoys a wide variety of  
19 technologies generation. We have natural gas,  
20 hydroelectric, coal. The coal plants are mostly  
21 located out of state within the -- control or use  
22 located within California.

23 There's nuclear generation both instate  
24 and some that comes from out of state. And  
25 renewables, such as geothermal, wind, solar,

1 biomass.

2 This chart here shows generation  
3 additions by decade. And as you can see, looking  
4 at the graph in the blue, up until about the '30s  
5 it was predominately hydro; just a little bit of  
6 natural gas and oil plants.

7 Initially the natural gas and oil  
8 plants, although they could run on either fuel,  
9 most of them ran on oil in the early part through  
10 the '50s. As you can see, it wasn't really until  
11 the '60s that we started seeing diversity; a  
12 nuclear plant was added. And in the '70s we saw  
13 some other plants, as well, some geothermal,  
14 nuclear, and gas plants, as well.

15 In the 1980s, due to a federal law  
16 called PURPA, a whole new class of generators were  
17 able to sell power in California. These are known  
18 as qualifying facilities or QFs. And the idea was  
19 to provide some diversity of fuel types, so we had  
20 a lot of renewable generation that was added  
21 during the '80s. And in the '90s, as well, there  
22 was still diversity.

23 However, if you look at the 2000, since  
24 we restructured the industry, the predominant fuel  
25 of choice has been natural gas.

1           This is a chart which shows the  
2       cumulative generation by fuel type. I just wanted  
3       to mentioned that this chart does not include  
4       retirements.

5           This graph shows the installed capacity  
6       by fuel type. And as you can see, natural gas has  
7       the largest share, followed by hydro, coal,  
8       geothermal, wind, biomass and solar. This is  
9       capacity, which is different than end-use energy.

10          The difference is that power plants run  
11       as needed, as dispatched by the system operator.  
12       For instance, if there's a year where there's not  
13       a lot of rainfall, there wouldn't be as much hydro  
14       plants available to run. And so would be the  
15       differences in imports and rainfall and weather  
16       patterns, we see different types of dispatch  
17       patterns.

18          And this graph here shows the 2001 the  
19       relative shares of fuel types that went into the  
20       power mix that was consumed by the consumers in  
21       2001. We have natural gas 36 percent; nuclear 15  
22       percent; coal was 20 percent, again that's mostly  
23       from out of state; large hydro 18 percent; 11  
24       percent renewables. As you can see the smaller  
25       pie chart there's a breakdown for renewables.

1           This chart shows the fuel types for each  
2   year for a series from 1983 through 2001. If you  
3   look at the bottom, in blue you can see the hydro  
4   resources. And you can see how much that  
5   fluctuates from year to year. Some years such as  
6   1983 was a very good year for hydro. And you can  
7   see a lot more of it's used, as opposed to 1981,  
8   which there wasn't a whole lot of hydro resources  
9   available.

10           What tends to happen is the hydro and  
11   the imports, which are largely hydro, as well, is  
12   the ones from the Northwest, as those fluctuate,  
13   as those are not available other resources, such a  
14   natural gas, take its place. This phenomenon is  
15   known as swing, and it requires the system be  
16   built up to accommodate years where there isn't a  
17   lot of hydro available.

18           This graph shows demand, and it's a  
19   yearly graph, so you can see the portion of  
20   January through April there's spikes, the low  
21   points are the weekends. So you can see that it's  
22   fairly constant. There is a little bit, when we  
23   get into the summer months from May through  
24   September, there's a lot more variability, a lot  
25   more spikiness to the graph.

1           This has to do mostly with air  
2           conditioning loads in California. As you can see  
3           a lot of the variability during the summer months  
4           has to do with summer air conditioning demand.

5           California's summer demand is spiky,  
6           meaning as we saw in the last graph. Most of the  
7           peaker plants that run only small number of hours  
8           per year, during peak demand periods.

9           Technologies that would reduce demand or  
10          shift demand from peak to offpeak can be  
11          implemented to reduce the need for new power  
12          plants. And demand response, some are limited as  
13          most customers do not have time-of-use meters.  
14          The industrial customers, at this point, have the  
15          most time-of-use meters. But, residential and  
16          commercial do not. The Commission currently has a  
17          project underway to try to increase this  
18          percentage.

19          This graph shows the electricity supply  
20          and demand profile for a typical hot summer day.  
21          As you can see on the bottom, the black is the  
22          nuclear baseloaded plant. It runs pretty much  
23          flat out all day long.

24          Above that, 5 percent renewables  
25          portion. The renewables, for the most part, also

1 run constantly, regardless of demand.

2 Then the imports, which show a little  
3 bit of sensitivity. But hydro is an intermediate  
4 resource which can be ramped up in the middle of  
5 the day to meet the peak demand.

6 Most of the load following plants are  
7 gas fired as shown in purple. And then at the  
8 very top of the pyramid, so to speak, in the light  
9 green, are the peaking plants and the demand  
10 response programs.

11 This chart is a generation duration  
12 curve. It's kind of technical, but what it shows  
13 is the relative heat rates on the left side. As  
14 you can see, for a very small fraction of hours of  
15 the year the plants with the 30,000 heat rate,  
16 which are very expensive to run and typically very  
17 dirty to run, are only run a few hours during the  
18 year. And plants at the right side of the graph  
19 have the better heat rates in the 5000 to 10,000  
20 range, will then run the majority of the year.

21 As plants in California retire, get  
22 older and are replaced by new plants, or just  
23 retired, the overall efficiency of the whole fleet  
24 improves. This is a trend that we've seen with  
25 the development of natural gas plants that started

1 in 2000 and 2001.

2 You look at the green line, that's the  
3 average efficiency fuel rate for all plants. And  
4 it's, as you can see, as the graph goes down it  
5 actually shows the heat rate going down, which is  
6 meaning that fuel efficiency is going up. The  
7 amount of fuel required to produce a kilowatt hour  
8 of generation is going down. And that's a good  
9 thing. We expect this trend to continue as more  
10 plants are retired or repowered in the future.

11 And finally, just to summarize,  
12 California's electricity supply is provided by a  
13 diverse set of generation facilities located  
14 instate and the western U.S. and Canada and  
15 Mexico. The overall fuel efficiency of the  
16 generation system has improved, and the addition  
17 of new combined cycle plants will continue in this  
18 trend.

19 But immediate load following capacity  
20 plays an important role by allowing the system to  
21 respond to swings in availability of hydroelectric  
22 and imports. Natural gas plants continue to  
23 provide the major portion of the state's swing  
24 capacity.

25 And finally, displacement of existing

1 generation to date has occurred through decisions  
2 to retire the old facilities, replace them with  
3 new combined cycle units. We expect this trend to  
4 continue.

5 Are there any questions?

6 CHAIRMAN KEESE: I do have one question.  
7 You referred to natural gas as the source of  
8 peaking power. And one of your graphs showed  
9 natural gas and coal. Does coal ratchet down at  
10 night and ramp back up through the day?

11 MR. WETHERALL: No, actually it doesn't.  
12 There are some coal-fired plants that provide  
13 cogeneration, but for the most part that was just  
14 the way that this particular slide was grouped.

15 If you were to actually draw it the way  
16 I should have drawn it, it would show coal as  
17 being relatively flat. Coal plants generally do  
18 not follow load.

19 CHAIRMAN KEESE: That's -- thank you.  
20 Let me ask one more question. One your slide that  
21 showed sources of generation, and I think you  
22 mentioned '83 was a very good water year.

23 Am I correct that we get, I think that  
24 first number is 50,000 -- we get that amount of  
25 generation out of hydro in '95, '96, close to it



1 in '78. Those are good water years.

2 And that stretch from almost '85 to '92  
3 where we get about half of that, are either normal  
4 or bad water years.

5 MR. WETHERALL: '85 to '92, yeah, I  
6 would say those are -- well, they're kind of  
7 mixed. '86 was a good year. I'd say probably  
8 '87, '88 were probably average years, somewhere in  
9 there.

10 CHAIRMAN KEESE: And so what it looks  
11 like, my interpretation of this slide over the  
12 years has been that it's in the good year where we  
13 have lots of runoff and generate lots of  
14 electricity that we get the higher number. In the  
15 other years, whether they're normal or bad, we get  
16 the smaller number.

17 And that in this area, using an average  
18 just does not work. If you have a normal year you  
19 store it up for the next year. If you have a bad  
20 year, obviously you don't have the generation.  
21 And it's only in the good healthy water year that  
22 you get the higher number. That's something we  
23 have to include in our calculations.

24 MR. WETHERALL: Right. Well, unless  
25 you've had a series of really bad years in a row,

1 hydro is still able to provide some help for the  
2 peak hours during the day. But as far as  
3 contributing to the overall energy supply, which  
4 this graph shows, hydro resources will be  
5 constrained. Because there's a lot of demands put  
6 on the water from agricultural purpose, recreation  
7 and environmental reasons.

8 What tends to happen is the imports will  
9 also tend to fluctuate, depending on demand in  
10 other states and surplus capacity, the price of  
11 fuel inputs, those sorts of things.

12 We kind of look at it in terms of we  
13 don't have a lot of control over the weather or  
14 imports, per se. So the difference is made up by  
15 the natural gas portion for the most part.

16 CHAIRMAN KEESE: I guess one of the  
17 conclusions that I was starting to draw is when  
18 you have nuclear as baseline, and you indicated  
19 renewables were pretty much baseline, and now  
20 you've suggested coal is baseline, that when we  
21 have this hydro fluctuation, natural gas is what  
22 makes it up.

23 MR. WETHERALL: Absolutely.

24 CHAIRMAN KEESE: So taking almost 50  
25 percent of our energy out of the equation, which

1 is nuclear, coal, renewables, when you lose half  
2 of your hydro it is a much bigger jump in natural  
3 gas than you would anticipate, and you just look -  
4 - consider that it was filling a demand.

5 MR. WETHERALL: Yes, I would agree with  
6 that. The other thing to consider, too, is the  
7 weather. It has a big effect on demand here  
8 within California.

9 So if you had perhaps a year where there  
10 wasn't a lot of imports available and hydro wasn't  
11 good, that it was a mild summer, you would not see  
12 quite as big a swing effect as a year where you  
13 had the same factors and a very hot summer.

14 MR. MCKINNEY: Chairman Keese, if I  
15 could add to that response a bit. I think one of  
16 the goals for this report cycle was coming out of  
17 our hydro day workshop, and essentially do a  
18 technical paper that would really help us  
19 understand better, you know, what's the breakout  
20 between, you know, that part of the hydro system  
21 that's dispatchable and has good carryover storage  
22 capacity from year to year, and which is more  
23 baseload, run of the river.

24 And that's something that Jim Woodward  
25 has been leading the effort on. So I don't know

1 if we'll be able to make that for this report  
2 cycle. But it's a really important part of the  
3 system to try to understand.

4 CHAIRMAN KEESE: And, again, it causes a  
5 major repercussion in the gas area. That's where  
6 it looks like it's going to.

7 DR. TOOKER: My name is Chris Tooker. I  
8 had one question about the efficiency graph, if  
9 you could go back. You showed the efficiency of  
10 existing facilities improving. Is that because  
11 they're being repowered or modified? That very  
12 top line, can you explain that?

13 MR. KENNEDY: The top line?

14 DR. TOOKER: Yes.

15 MR. KENNEDY: Yes, that would be  
16 repowers.

17 DR. TOOKER: Okay.

18 MR. KENNEDY: That would be -- to the  
19 existing.

20 DR. TOOKER: Thank you.

21 MR. KENNEDY: To the extent that folks  
22 in the audience have questions or comments, if you  
23 could come up to the table where Chris just did,  
24 and state your name and who you're with so that  
25 we'll have record of that. The proceedings today

1 are being recorded and a transcript will be  
2 available I believe in something like three weeks  
3 is the sort of turnaround we've been getting.  
4 Okay.

5 MS. DeBONO: I'm Teresa DeBono. I work  
6 as the Environmental Manager with Pacific Gas and  
7 Electric Company in their power generation  
8 department.

9 And I had a question on this section  
10 related to hydroelectric facilities. And I  
11 understand that the Department of Energy, and on  
12 an international basis, hydro is considered  
13 renewable. But sometimes in California hydro is  
14 not considered renewable.

15 Sometimes it's characterized as a  
16 renewable if it's small or large, so these graphs  
17 don't have a consistency on how you want to  
18 characterize hydro as a renewable.

19 I think it's an opportunity for  
20 California to take advantage of its renewable  
21 resources. California is a leader in the nation  
22 in providing renewable resources, and that's  
23 because of its availability of the vast hydro  
24 system that it has.

25 So I think in a policy decision is how

1 do you want to characterize hydro in doing an  
2 environmental performance report and some of the  
3 other renewable portfolio standard reporting in  
4 other reports that you're doing. The  
5 characterization of hydro as a renewable seems to  
6 be being downplayed.

7 And I think it's important also from a  
8 policy issue because you would want the Energy  
9 Commission to be helping to build a sustainable  
10 energy system, something that is based on  
11 renewables. Where you see the direction going is  
12 more reliance on natural gas. And I don't know if  
13 that's the direction you want to go. But I know  
14 hydro is there and available to help contribute to  
15 that sustainable energy supply because it is  
16 renewable.

17 So I would hope that we can get some  
18 clarification and the consistent definition of  
19 hydro as a renewable in these various reports.

20 So, thank you.

21 CHAIRMAN KEESE: Well, I think you make  
22 an extremely good point. And I think in this  
23 document we should make that point. The response  
24 that I'm sure staff would come up with and I  
25 would, from my other work here, is that we have a

1 lot of responsibilities on building renewables in  
2 California. And large hydro is not in that  
3 equation.

4 So it is absolutely vital that in  
5 talking about renewables that we do not add that  
6 large hydro number. But when we are explaining  
7 where California is on a sustainable future, again  
8 it's absolutely critical that we do include hydro  
9 in there.

10 So, your point is well taken. We'll  
11 have to be careful about how we characterize this.  
12 But because of all the other things we do in that  
13 renewables area, that Commissioner Geesman does in  
14 the renewables area actually, we have to keep that  
15 segregation.

16 MR. KENNEDY: Yeah, and I do think it is  
17 a very worthwhile point that it's very important  
18 in this document and other documents to be clear  
19 about how we're drawing the break-out. If we're  
20 separating large hydro from a bucket of  
21 renewables, we need to be clear about that.

22 And as we're moving to finalize the  
23 report, to the extent that there are  
24 inconsistencies or lack of clarity on that sort of  
25 issue, that's something that we're certainly going

1 to be looking at.

2 COMMISSIONER BOYD: Staff, correct me if  
3 I'm wrong, but don't we include in renewables  
4 small hydro, i.e., 30 megawatts or less than 30  
5 megawatts? So we have a mixed bag approach.

6 MR. KENNEDY: Yeah, and I think in at  
7 least one of the graphs there was a distinction  
8 between large hydro on the one side and then the  
9 renewables. And then small hydro was included in  
10 the break-out for renewables.

11 So, at least within here we were doing  
12 that. And I think there's a number of places in  
13 the report where there's not necessarily  
14 consistency from one section to the next in how  
15 we're talking about some of the capacity in the  
16 system. So that's something we're looking to  
17 clean up to the extent we can in this report. And  
18 certainly for the next cycle.

19 MR. McKINNEY: Yeah, and the original  
20 PURPA language created a 30 megawatt threshold  
21 for, you know, small hydro versus large hydro.  
22 And think there were assumptions about the damage  
23 that large hydro did vis-a-vis small hydro. Some  
24 of us staff here in the Commission and other  
25 agencies think that 5 megawatts might be an



1 interesting thing to look at in terms of defining  
2 small hydro.

3 MR. BELL: Good morning; my name is Pete  
4 Bell with the California Hydropower Reform  
5 Coalition. And you guys pretty much just made the  
6 point that I came up here to say.

7 We definitely need to look very closely  
8 at how you define hydro as a renewable resource  
9 because there are a lot of hidden damages that are  
10 done by hydro. And as the charts up there have  
11 just shown you, it's a very inconsistent supply of  
12 power.

13 So be very careful how you define hydro  
14 as renewable. That's, at this point, is the  
15 testimony I wanted to make.

16 COMMISSIONER BOYD: Thank you.

17 MR. KENNEDY: Do we have any other  
18 questions or comments?

19 MR. WOODWARD: If I may; I'm Jim  
20 Woodward with the California Energy Commission,  
21 electricity analysis office. Perhaps I could add  
22 to the comments on hydro and Ron's good  
23 presentation.

24 That variability year to year is quite  
25 striking from that wet year in 1983 and the series

1 of dry years following, leading up to 1992. What  
2 we found is the energy, total amount of energy as  
3 shown on that graft does vary quite a bit. I  
4 think the average is -- statewide average, if  
5 you'll bear with me, 37,000 and something gigawatt  
6 hours a year.

7 In 1983 that was 159 percent we  
8 averaged. During 2001, I think it dropped to 70  
9 percent of average just for the instate resources.

10 What's even more striking is that the  
11 average change up or down, year to year, is about  
12 25 percent in total energy. And that is made up  
13 by natural gas fired plants.

14 But we think the power, the capacity is  
15 more stable. Looking at the load duration curve,  
16 those first few hours of any given year when load  
17 is at a maximum, is probably more dependable,  
18 especially for the merchant-owned -- I'm sorry,  
19 the municipal and investor-owned utilities, the  
20 PG&E and Edison systems. They're higher up in  
21 watersheds that have more reliable dependable  
22 capacity, we think.

23 The reservoirs that have the biggest  
24 swing in capacity for meeting that peak load are  
25 probably those at the foothills like Folsom,

1 federal reservoirs like that. Shasta perhaps,  
2 although Shasta works very well as a peaking  
3 energy plant regulated by Keswick downstream from  
4 there.

5 One of the difficulties that  
6 analytically we still have yet to get a good  
7 handle on is in terms of large and small hydro, is  
8 understanding where the impacts are. And they may  
9 not be proportional to capacity in that sense.  
10 Small hydro can have very large impacts and vice  
11 versa. It depends, with a need, perhaps, for more  
12 geographically fine scale analysis and monitoring.

13 So, again I applaud the work that's been  
14 done. There's a lot of work still to be done in  
15 that area.

16 COMMISSIONER GEESMAN: Let me ask, while  
17 you're up here, when you construct your average  
18 for hydro how far back do you go in terms of the  
19 data that's available to you?

20 MR. WOODWARD: 1983, because the chart  
21 shown is the best we have for statewide. We can  
22 go back to 1897 for some of the hydro plants in  
23 the state, the federal power act.

24 COMMISSIONER GEESMAN: And when you go  
25 back to that earlier period of time are you

1 looking at data only for a particular plant, or  
2 are you trying to generalize across the state in  
3 terms of plants that have come on subsequently?

4 MR. WOODWARD: Good question. We try to  
5 use the best data that's available. In some cases  
6 it's a utility like LADWP may look at all their  
7 capacity as a system and derate it as their  
8 portfolio. Others may have data on a specific  
9 plant. Some have it by the watershed basis.

10 So we try to factor in, in our short-  
11 term predictions, what the watershed will yield  
12 based on capacity and our historical data.

13 COMMISSIONER GEESMAN: I'm not as  
14 concerned, I don't think, with capacity, because I  
15 believe your statement is generally correct, as I  
16 am with energy. And the fluctuation in the  
17 availability of hydroelectric energy can have some  
18 pretty radical impacts on the price of electricity  
19 in any particular year.

20 In a different light, I was involved in  
21 attempting to finance a couple of different hydro  
22 projects. And the rating agencies were very  
23 emphatic that we should incorporate as much  
24 historical data as possible in projecting future  
25 hydro conditions.

1           And their point, and generally we were  
2     able to go back to the '20s, their point was that  
3     it's a pretty small slice of geologic time. And  
4     that in truth there was no such thing as average  
5     hydro conditions. In evaluating a particular  
6     project they were concerned that we'd have enough  
7     revenue to meet debt services in any particular  
8     year.

9           I think from the standpoint of the  
10    state's interest we probably are more interested,  
11    or should be, in those fluctuations than we are in  
12    any artificially constructed average.

13           But I'm curious as to the source of your  
14    data and the length of it.

15           MR. WOODWARD: Well, I agree with your  
16    points entirely. Variability is often hidden by  
17    the average figures, even though their useful  
18    point. Until 1976, I think, people in California  
19    believed we would not have two consecutive dry  
20    years in a row. And it's a huge swing in that  
21    regard.

22           COMMISSIONER GEESMAN: Thank you.

23           CHAIRMAN KEESE: I was going to add that  
24    one of the hidden causes of the energy crisis was  
25    that between '95 and 2000, as you'll see on that

1 graph, we got the higher number, almost 20 percent  
2 of our energy, from hydro. Where for the ten  
3 years before that we got 10 percent.

4 And we started relying on this luxury of  
5 getting that much hydro. And then when the so-  
6 called crisis came, and we had these old, un-  
7 maintained plants that were sold off, that had to  
8 run twice as hard as they ran the year before, it  
9 was lack of hydro, to a large extent, that caused  
10 that pressure on those old plants and put them  
11 offline when they ran harder than they'd ever run  
12 before.

13 MR. WETHERALL: That's true. There was  
14 also less imports available during that time, and  
15 previously, as well.

16 MR. MCKINNEY: Ron, do you know what the  
17 break-out was during the power crisis years  
18 between diminishment in hydro imports and the  
19 diminishment in instate production?

20 MR. WETHERALL: If I recall, the natural  
21 gas portion was about 35 percent, which was almost  
22 5 or 6 percent higher than typical. Again, I'm  
23 working off the top of my head. But there was a  
24 much larger natural gas contribution.

25 Imports had also decreased considerably

1 from the northwest to about half of what they had  
2 been.

3 MR. KENNEDY: Go ahead.

4 MR. KELLY: Steve Kelly with Independent  
5 Energy Producers. I was struck by the table that  
6 shows the patterns of daily peak demand. And note  
7 that the swing is roughly about 80 percent between  
8 the -- I'm looking at this graph that shows the  
9 minimum demand may be about 30,000 megawatts. I'm  
10 actually the one ahead of that --

11 COMMISSIONER BOYD: Your spiky chart.

12 MR. KELLY: The spiky chart, yeah. And  
13 peak demand was about 54,000 megawatts, the way I  
14 look at it, which is a swing of about 80 percent  
15 from the low to the high during that period.

16 Is that typical for the desert kind of  
17 region?

18 MR. WETHERALL: This is a statewide  
19 resources and I believe this is 2001 data, so it  
20 would be a little spikier than what we've seen the  
21 last couple of years. But this is, like I said, a  
22 statewide, not necessarily a --

23 MR. KELLY: Is that kind of typical for  
24 a summer peaking state, though, that 80 percent  
25 swing? Even if it's a little exaggerated because

1 of the year you took. Does Arizona have an 80  
2 percent swing roughly, or New Mexico, other states  
3 like that?

4 MR. WETHERALL: You know, I'm not really  
5 qualified to answer that.

6 MR. KELLY: I'm just wondering whether  
7 in the other -- I guess the follow-on on that is  
8 the comment that building on some of the previous  
9 discussion was that we typically think we meet the  
10 peak through hydro from the northwest and natural  
11 gas instate and some from the northwest.

12 And with the expectation that there  
13 won't be any new hydro from the northwest, I'm  
14 wondering, you know, if that kind of swing  
15 continues as California's load grows over time.

16 The impact of that with the -- my  
17 expectation that hydro will be less available to  
18 California from an import perspective, and where  
19 will be fill that need. Maybe it's demand side  
20 management. I think that would be part of your  
21 integrated study about how that would fit into  
22 that.

23 But there's going to be an impact on  
24 that, I think, if we continue to have that 80  
25 percent swing, or even a 70 percent swing.



1           MR. WETHERALL: Yeah, I would agree with  
2           that assessment. The trend is toward building  
3           more instate resources, but I think demand side  
4           management and time-of-use meters will also help  
5           to provide some demand response, which is one  
6           thing that could be done. If we could just get  
7           some of the load to be shifted from the peak  
8           afternoon hours to the evening or morning hours,  
9           that would reduce the spikiness considerably.

10          COMMISSIONER BOYD: Well, in recognition  
11          of that dilemma and in preparing the energy action  
12          plan between the three agencies, efficiency,  
13          demand side management, et cetera, did come out  
14          top of the rung in terms of priorities for action.  
15          So your point is well taken. But I think  
16          fortunately the issue is somewhat recognized and  
17          the world is changing significantly. And our  
18          dependence on out-of-state imports and total out-  
19          of-state imports of hydro are changing drastically  
20          because of lots of factors, including huge  
21          population growth and economic demand and what-  
22          have-you.

23          MR. KELLY: But I think in the area  
24          workshops on the integrated energy plan came out I  
25          think there was a figure from imports of 9000

1 megawatts. And one of the questions that asked  
2 was how firm was that. Raise the question about  
3 how reliable can we expect that that will be there  
4 when we need it as we move forward to meet that  
5 kind of swing.

6 MR. WETHERALL: I think the 9000  
7 megawatts includes both firm imports, as well as  
8 expected spot market imports. If you want to just  
9 talk about firm resources where we have contracts  
10 the number is less, it's closer to 7000.

11 CHAIRMAN KEESE: Let me jump in here.  
12 That's what is out there that we could get.

13 MR. WETHERALL: Yes, that --

14 CHAIRMAN KEESE: Except our transmission  
15 system does not accommodate bringing that much in.  
16 So if --

17 MR. WETHERALL: Well, historically we've  
18 seen levels that high. Not necessarily always  
19 onpeak. There's a lot of factors that could  
20 prevent, you know, us from getting the maximum  
21 amount. But we believe that's 8000 is a  
22 comfortable number, and we think that's  
23 achievable.

24 CHAIRMAN KEESE: Some of that is  
25 California-owned that we really rely on. And in

1 addition to that, the number I heard was 7500, so  
2 we're right about 8000. But, as I recall, also  
3 with what's committed we can't take all that 8000.  
4 We just hope that 3000 or 4000 of it is available  
5 when we need it.

6 Isn't that the more comfortable --

7 MR. WETHERALL: Well, the majority of  
8 that is locked up in contracts that we either get  
9 from the northwest or from the southwest. There's  
10 only a small portion of about 2500 megawatts that  
11 we are counting as this spot imports that may not  
12 be there because they're not committed; they're  
13 nonfirm resource.

14 MR. KELLY: Do those contracts extend  
15 out in time?

16 MR. WETHERALL: Yes, but --

17 MR. KELLY: -- continues.

18 MR. WETHERALL: Yeah. There are a whole  
19 variety of contracts. There are short-term, two  
20 or three years; some that are ten years. Most of  
21 them are less than ten years. And the utilities  
22 are in the process now of procuring, you know,  
23 resources for the future.

24 So what we've done for our most recent  
25 projections is only the contracts that have been

1 signed. And so when we're talking about this  
2 8000, we're only really talking about the summer,  
3 the current summer that we're experiencing now.

4 But more contracts will continue to be  
5 signed as the current ones expire.

6 MR. BEEBE: Good morning; I'm Bud Beebe  
7 with the Sacramento Municipal Utility District.

8 Ron, you mentioned during your talk that  
9 you highlighted an issue about PURPA, which was to  
10 increase the renewable energy. PURPA, of course,  
11 is federal legislation, national policy. And I  
12 think it's important that PURPA had a number of  
13 things in it nationally. Steve could probably  
14 bring up other ones.

15 But there's two of them I'd like to  
16 mention. And one of them is that it was intended  
17 to increase the overall efficiency of energy use,  
18 and that would be fossil energy use, national  
19 resource based.

20 And secondly, it also went a long ways  
21 towards rebuilding outdated industrial boiler  
22 installations. And as California's industrial  
23 boiler infrastructure gets older, we might want to  
24 think about some of the benefits of PURPA in that  
25 context in the future.

1 I'm always fascinated by the amount of  
2 comment that hydro gets in these forums. I think  
3 that's very natural, it's a natural outgrowth of  
4 the amount of cerebral resources we spend on  
5 hydro. Even though it's an important, but fairly  
6 small piece of the overall energy puzzle, and  
7 electricity in California today, but a very  
8 important one.

9 And we've learned a lot about it and  
10 this difficult interplay between it comes every  
11 year, it gets replenished. We have storage. The  
12 storage has this interplay with the amount of  
13 capacity that's available at any time. And it is  
14 a wonderful peaking resource.

15 I mean it's great to talk about, but  
16 we're not going to build a lot of new hydro. So  
17 maybe what we could do is learn from what we learn  
18 from hydro, and begin to think about things like  
19 natural gas.

20 You know, natural gas in the electric  
21 utility industry is looked at pretty much like the  
22 way we think of run-of-river hydro. When it's  
23 there and you can afford it, you use it. But the  
24 capacity of hydro to enriching the overall  
25 electrical energy supply in California by the use

1 of storage is an extremely important piece.

2 So, maybe as we think of some of these  
3 other even finite resources we can begin to think  
4 of the ways that we learn to maximize our use of  
5 hydro to maximize our use of things like natural  
6 gas.

7 And thirdly, and lastly, coal is  
8 something that we mostly import from the outside.  
9 There are utilities in California that own  
10 resources outside California, and I know that  
11 those figure prominently in some of this. But I  
12 will mention that coal is also sort of a, not a  
13 peaking resource, but it's a resource that we can  
14 structure through contracts to have available at  
15 peak times if we don't own it.

16 Of course, that means that whoever does  
17 own that resource somewhere else is likely to have  
18 to have an additional resource available to them  
19 when we want to access our -- the coal through  
20 those at peak times through our contracts.

21 I guess the end result of that is that  
22 coal will remain a more expensive resource for  
23 Californians than it is for people outside of  
24 California who own it.

25 Thank you.

1                   MR. KENNEDY: Are there any other  
2 questions or comments on the electricity overview  
3 section?

4                   Okay, I think we will go ahead and move  
5 on to air quality and Matt Layton.

6                   MR. LAYTON: Good morning; I'm Matt  
7 Layton with the air unit of the environmental  
8 office of the California Energy Commission.

9                   I'm presenting a few highlights of the  
10 2003 Environmental Performance Report air section.  
11 I am available to talk about, or answer any  
12 questions about the entire section. Obviously we  
13 didn't want to present the entire section here  
14 today.

15                  First and foremost, from the generation  
16 point of view, and from the air emissions point of  
17 view, we have a very clean generation system. The  
18 reason for this is, as Ron has pointed out, we  
19 have a very diverse resource mix, relying on  
20 imports, hydro, nuclear; also in that is a  
21 predominance of natural gas. Natural gas is  
22 cleaner than other fuels; can be generally more  
23 controlled, put on natural gas units, and  
24 therefore our system is very clean.

25                  Also, as I said, we have a broad use of

1 emission controls. We believe that the system  
2 performance, from the air emission standpoint,  
3 should continue to improve. New resource  
4 additions are more efficient, as Ron pointed out  
5 in some of his charts. And also they are cleaner.

6 Also there were some retrofit rules that  
7 were implemented in the early '90s. Those have  
8 been -- are being implemented. Not quite all  
9 implemented yet, so we're seeing more reductions  
10 coming from those retrofit rules. And also  
11 there's potential from new retrofit rules on some  
12 of the existing resources that were not cleaned up  
13 by the last go-round.

14 So statewide air emissions from the  
15 generation sector are small. The averages have  
16 been pretty consistent for NOx and PM10. NOx  
17 shown here are SO2, the sulfur dioxides, CO,  
18 carbon monoxide; and also not shown here is the  
19 CO2 numbers.

20 But from the generation sector the most  
21 important pollutants are NOx, NO2 and NO. And  
22 then also the PM10.

23 The PM10 numbers are very small from the  
24 generation sector. While the numbers are very  
25 consistent and flat, and again we could be in the



1 error range, and therefore we're not really sure  
2 if the numbers go up or down, but the numbers are  
3 very small. So the rest of the presentation deals  
4 a lot with NOx. We're still very interested in  
5 PM10, but seemingly less important from the  
6 generation sector than the NOx numbers.

7 One thing to note about this chart here,  
8 this table, in 2001 you see a sharp dip in the NOx  
9 number, 84 tons, compared to the other -- these  
10 are tons per day, annual average.

11 In 2003 the almanac that ARB put out,  
12 they went back and adjusted 2002, 2000 and '95.  
13 They haven't gone back and looked at the 2001  
14 number yet. I suspect that 2001 number will  
15 change. But overall you can see the numbers are  
16 fairly flat and fairly consistent from year to  
17 year.

18 In comparison with the CO2 number, say  
19 for 1999, CO2 was about 16 percent of the state  
20 total for CO2 from the generation sector. So, we  
21 start talking about CO2, the generation sector may  
22 be looked at as a possible mechanism for  
23 additional reduction. But for NOx and PM10,  
24 again, the numbers are very small.

25 COMMISSIONER GEESMAN: How much variance

1 in that chart would there be if you presented it  
2 on a district-by-district basis?

3 MR. LAYTON: Well, I guess there could  
4 be a lot of variance. Perhaps this chart here is  
5 one way to answer that. South Coast, which has  
6 poor air quality, and San Joaquin, which has poor  
7 air quality, the numbers are still pretty  
8 consistent.

9 What is not shown on this chart is say  
10 the north coast for Mendocino. There is one power  
11 plant up there. It's fairly dirty. And at the  
12 same time they don't have the air quality problems  
13 that South Coast does.

14 So, trying to suggest that one  
15 particular generation sector is a dominant  
16 resource, or dominant contributor to the inventory  
17 in a basin may not be the whole story, because  
18 then again the basin may not have air quality  
19 problems.

20 COMMISSIONER GEESMAN: Yeah, the flip  
21 side of that, though, is that one entire House of  
22 the California Legislature has become persuaded  
23 that problems in the Imperial Valley are such from  
24 the generation sector that we ought to stop the  
25 import of power from Mexico.

1 I'm not certain that either the  
2 Legislature or the people in the Imperial Valley  
3 could take much comfort from looking at the  
4 statewide averages.

5 MR. LAYTON: Imperial is a -- air basin.  
6 Imperial has about 350 megawatts of installed  
7 capacity. Some of it is in clean cogen; some are  
8 turbines and boilers that are owned by the  
9 Irrigation District, perhaps of older vintage.

10 In 2000 that 350 megawatts produced  
11 about 1000 gigawatt hours, and about 500 tons of  
12 NOx. The two new plants, Energen and Centro  
13 Plants across the border, if they were operated at  
14 90 percent capacity, producing about 12,000  
15 gigawatts, 12 times as much energy, they would  
16 produce the same amount of NOx, 500 tons.

17 Perhaps there are opportunities for  
18 California to clean its own system more before we  
19 suggest that out-of-state is a contributor to our  
20 problem.

21 COMMISSIONER GEESMAN: Well, then I  
22 would suggest that type of analysis might better  
23 inform the California Legislature how to address  
24 these problems.

25 MR. LAYTON: Well, I would agree.

1 (Laughter.)

2 COMMISSIONER BOYD: I'm glad you said  
3 that.

4 COMMISSIONER GEESMAN: Thank you.

5 COMMISSIONER BOYD: I was --

6 (Laughter.)

7 COMMISSIONER BOYD: The hesitation had  
8 me worried a little bit there, but as some people  
9 in this room probably know, there's a long-held  
10 thesis in the air quality world that if we don't  
11 do it at home, it comes from somewhere else.

12 So it took decades to convince Kern  
13 County that its pollution was home grown, that it  
14 all wasn't coming from the Bay Area. I'm afraid  
15 Imperial County is about where they were 10 to 15  
16 years ago, so, Commissioner Geesman, you're right  
17 with that comment.

18 MR. LAYTON: Well, I was trying to point  
19 out that the emissions are small from the  
20 generation sector. Ninety percent of Californians  
21 do breathe bad air. Again, the populations are  
22 concentrated in certain areas. Those areas do  
23 have bad air quality. South Coast being one of  
24 them; San Joaquin Valley is growing and the air  
25 quality is not improving very much at this point

1 in time. Sacramento, as well.

2 This chart is from 2001. San Diego has  
3 just actually reached attainment for ozone. So  
4 these air basins are still making progress.  
5 However, as these emissions -- every source of  
6 emissions is a potential for reduction. The  
7 generation sector is a small contributor, but  
8 still the potential is there for additional  
9 reductions from the generation sector.

10 As Ron pointed out in his chart -- Ron  
11 actually took care of most of my issues here --  
12 the predominance of natural gas is good for  
13 California. It's a very clean resource; it can be  
14 controlled. What is not shown by this chart, this  
15 is installed capacity, this is not energy.

16 Ron pointed out that in I think 2001 36  
17 percent of the energy came from natural gas. You  
18 would think, looking at this chart, that 91  
19 percent of the energy might come from natural gas.  
20 But, again, this is just the fuel-fired, doesn't  
21 include hydro. We're just trying to look at where  
22 the emissions might come from.

23 If in a swing year where you have say  
24 low imports, low hydro, the most likely resource  
25 we will turn to is natural gas, which is good

1       because it is fairly clean.

2               The 9 percent other types of fuel  
3       include coal, biomass. These are pretty much  
4       baseload, they're cogen plants. And so the swing  
5       and the emissions during a low hydro year would  
6       come from natural gas.

7               COMMISSIONER BOYD: You keep mentioning  
8       coal -- not you, but coal has been mentioned  
9       several times here today, including by yourself.

10              Do you have a figure of how much  
11       installed capacity California relies on the  
12       combustion of coal?

13              MR. LAYTON: It's about 550 megawatts.

14              COMMISSIONER BOYD: Thanks.

15              MR. McKINNEY: If I could follow up on  
16       that question, Commissioner Boyd. I'm still not  
17       really clear how we think about coal that's  
18       dedicated for California say through Edison or  
19       metropolitan. And I think that number is about  
20       6000 megawatts that's dedicated for California  
21       use.

22              And I know there's been a change in the  
23       way our electricity office categorizes that amount  
24       of energy coming into the state. But I'm never  
25       quite clear on how we think about that in

1 environmental terms.

2 COMMISSIONER BOYD: Well, touch,, but  
3 I'm looking for coal by wire versus coal burned  
4 inside the borders of California to generate  
5 electricity. Not to say the other isn't something  
6 to be concerned about.

7 MR. LAYTON: Well, the instate capacity  
8 that's fuel fired, almost 85 percent of it has  
9 some form of NOx control or PM10 control on it.  
10 The system, again, is fairly well controlled and  
11 fairly clean.

12 This chart, while complicated, suggests  
13 that SCR is broadly used, which is the best NOx  
14 control currently, or the most broadly used NOx  
15 control. And what is not shown on this particular  
16 chart are the PM10 controls. Again, PM10, being  
17 such a small number, we didn't spend too much time  
18 on it.

19 That 15 percent that is uncontrolled, it  
20 has potential for installation of controls, but  
21 some of that capacity that doesn't have controls  
22 right now could be low capacity factors, therefore  
23 low annual emissions. Therefore, the cost  
24 effectiveness may not be there for installing that  
25 particular emission controls.

1           Some of that may be peaking, which is  
2           very poor efficiency. And it may not have, again,  
3           may not be cost effective for the retrofits. Some  
4           of it may be at the end of its useful life,  
5           already experiencing high maintenance costs,  
6           therefore the owner may choose not to retrofit and  
7           shut down.

8           So, while it appears there are some  
9           opportunities for additional emission controls,  
10          they may not be realized, they may not actually be  
11          kept online with emission controls. They may  
12          actually retire.

13          We talked about water systems are clean;  
14          and again, we believe the system is going to stay  
15          very clean. This chart, while very difficult to  
16          read, everything above the line is pretty much the  
17          system we have today, which is about .45 pounds  
18          per megawatt hour.

19          Below the line are some of the new  
20          things that are coming on, the new resources  
21          coming online, and what we think their performance  
22          will be and what their performance actually has  
23          been.

24          You can see that the internal combustion  
25          engines are not necessarily the resource of choice



1 from an air emissions standpoint. They can be  
2 very dirty on a pounds per megawatt basis.  
3 Generally they're about 1 percent of our installed  
4 capacity. They do not supply that much energy on  
5 an annual basis.

6 Instate coal is about .66 pounds per  
7 megawatt hour. Out of state, that's about 3.4  
8 pounds per megawatt hour. Our instate coal is  
9 very well controlled, very clean compared to out  
10 of state.

11 Our biomass is about 1.7 pounds per  
12 megawatt hour. Renewables may not be the best  
13 resource from an air emissions standpoint;  
14 however, they do provide fuel diversity and also  
15 get rid of open-field burning. Again, there's  
16 perhaps an opportunity for some biomass boilers to  
17 become cleaner.

18 At the very bottom of this chart at zero  
19 pounds is DSM. That would be a very good air  
20 emissions addition to the system. Wind and  
21 photovoltaics, as well. Fuel cells at .03 and the  
22 modern combustion turbine combined cycle is about  
23 .06 pounds per megawatt hour.

24 We believe the system average is about  
25 .45 for the fossil. That number is subject to

1       some debate up and down because the inventories,  
2       themselves, are somewhat imprecise, the exact  
3       number for the emission number for the average  
4       system is pretty indeterminate.

5               As Jim alluded to earlier, some of the  
6       databases were inconsistent. So we managed to get  
7       some very good data on about two-thirds of the  
8       fired system. The other third, being the  
9       cogenerators and baseload units, are not required  
10      to report as much information.

11             So what we have here is just mostly  
12      dominated by gas. Most of these are boilers that  
13      were owned by utilities that now are sold to  
14      merchants, some of the new merchant plants.

15             You can see that the emissions, which is  
16      the dark, went up during 2000/2001, the energy  
17      crisis. You can also see that the generation went  
18      up significantly in 2000/2001. These are the  
19      units that made up the lack of hydro instate and  
20      the lack of imports from out of state.

21             But, at the same time, the emission  
22      factor on the pounds per megawatt hour basis for  
23      these units went down by about 50 percent from .8  
24      to .4 pounds per megawatt hour. We account for  
25      that with retrofits being implemented. We account

1 for that with new resources being added which are  
2 much cleaner than the system average. Again,  
3 combustion turbine combined cycle .06 and --  
4 megawatts will have a tendency to drive the  
5 overall average down.

6 The one-third of the fleet that's not  
7 shown on this chart, the fuel-fired fleet are the  
8 baseload and cogens, as I said. We assume their  
9 emissions were fairly constant throughout this  
10 time period from '96 to 2002. We found their  
11 energy output was constant through that same time  
12 period, and so we assume that emissions are  
13 constant, as well. There may be improvement in  
14 air emissions that we haven't quite culled those  
15 numbers out of the databases yet.

16 COMMISSIONER GEESMAN: And do you have  
17 any ability from the data you currently have to  
18 disaggregate that chart down to a district-by-  
19 district basis?

20 COMMISSIONER GEESMAN: I'd like to see  
21 that before the final report comes to the  
22 Commission.

23 MR. LAYTON: We will try to accommodate  
24 that.

25 COMMISSIONER GEESMAN: Thank you.

1           MR. McKINNEY:  You're not doing anything  
2           the next couple of weekends, are you?

3           (Laughter.)

4           MR. LAYTON:  The imports of electricity  
5           has always been a controversial question within  
6           the Commission and within the out-of-state  
7           communities, as well.

8           The out-of-state emissions -- well, the  
9           out-of-state generation has -- there's less  
10          cogeneration, therefore there's better reporting.  
11          The cogenerators are exempt from reporting.

12          So what we have here is quite a large  
13          slice of the out-of-state fuel-fired generation.  
14          Again, there wasn't much change in the emissions  
15          or the -- well, the imports -- there wasn't much  
16          ability for the imports to respond to the lack of  
17          hydro, because they pretty much supply as much  
18          energy as they could.

19          But I guess the most important thing  
20          about this chart is the emission factor.  Yes,  
21          out-of-state emission probably does not have NOx  
22          controls to the extent that instate generation  
23          does.  And that's reflected in the tenfold  
24          increase in the emission factor, 3.5 pounds per  
25          megawatt hour versus the instate -- of about .38.

1           Is that a problem? Well, generally most  
2   of the -- there's very few generators located  
3   right on the border except perhaps in Mexico. So  
4   we don't see these emissions. Still, there's a  
5   lot of debate about whether these emissions need  
6   to be controlled more or not. I'll get to the  
7   next chart and explain a little bit more on the  
8   out-of-state emissions.

9           One of the reasons we think there was a  
10   downward trend in the emission factor for NOx is  
11   the increased use of natural gas out of state.  
12   Again, this is a very small slice. Only three  
13   years of data on natural gas used, but more than  
14   double from this period of 2000 to 2002. That  
15   would help improve the NOx number. NOx from gas  
16   fired generally is less than NOx from coal-fired  
17   plants.

18           While these are very hard to see,  
19   hopefully the color is illustrative of the  
20   problems. California, all the color are  
21   nonattainment areas for pollutants. The western  
22   region, excepting Phoenix and El Paso and Dallas  
23   and Reno is attainment for the federal ozone  
24   standard. Therefore will a pound of NOx, which is  
25   an ozone contributor or precursor, have the same

1 effect out of state as a pound of NOx instate.

2 I think NOx is very important. Nox from  
3 generation is very important in California because  
4 we, as the citizens of California, breathe a lot  
5 of bad air. And therefore any controls we can get  
6 from -- or reduction we can get from the  
7 generation sector are valuable. The NOx out of  
8 state may not have the same health effects.

9 What is not shown in this chart is the  
10 regional haze issue which has become very  
11 important out of state. If you look to the right,  
12 that's the PM10. There are more areas where the  
13 PM10 is a problem. A lot of these are centered  
14 around urban areas, once again. A lot of them are  
15 centered around power plants. And some of them  
16 are centered around smelters located out of state.  
17 PM10 is more problematic out of state, therefore  
18 the emissions of PM10 out of state may have health  
19 issues.

20 But the regional haze issue again is not  
21 shown here. NOx is a contributor to that regional  
22 haze. So, again, it's very difficult for us to  
23 say that NOx out of state, because the numbers are  
24 ten times as high, is a problem for that, those  
25 out-of-state regions.

1           So, anyway, in summary the system is  
2           very clean, but I think there are potential  
3           reductions still available to us through these  
4           retrofit rules. However, the retrofit rules need  
5           to be looked at. Are they the most cost effective  
6           reductions available.

7           Again, other sectors of our society may  
8           be able to provide better reductions, the global  
9           sector, things like that.

10          One of the problems we had during the  
11          energy crisis is that there was some poor  
12          coordination of outages for some of the retrofits  
13          that were required. These retrofit rules were on  
14          the books since '95. The owners were aware of the  
15          rules.

16          The rules were called out in the  
17          divestiture proceedings. The CPUC highlighted the  
18          fact that these rules needed to be implemented,  
19          need to be in place because reductions were  
20          expected, required, needed by the residents of  
21          California. But once it came to coordinating  
22          those outages for those retrofits there were some  
23          problems.

24          And, again, a lot of these retrofits may  
25          include a switch to natural gas. Natural gas is

1 easier to control from a NOx perspective than some  
2 of the liquid fuel oils.

3 So I think there needs to be a debate  
4 about, as we try to make our system cleaner, our  
5 becoming more and more reliant on natural gas.

6 Some of the discussions earlier centered  
7 on out-of-state power plants. Obviously that  
8 would be, from an emissions standpoint, very  
9 helpful to California to move power plants out of  
10 state, or move power plants to areas which are  
11 pristine.

12 Backing up, northern California doesn't  
13 seem to have the same air quality problems that  
14 southern California does. Would it be of value to  
15 us, as citizens of California, to move power  
16 plants to the north. There may be fewer offset  
17 requirements. Offsets are significant hurdles to  
18 power plants. So will the drying up of offsets  
19 drive power plants to more pristine areas or to  
20 out of state. Again, there ought to be a lot of  
21 debate about whether or not the residents of these  
22 pristine areas want these power plants located  
23 there, or whether we, as citizens, want to export  
24 our pollution.

25 We have not talked much about PM10. The



1 numbers are very low. However, PM2.5, the  
2 standards are implemented. They're out there.  
3 Measurements are being taken throughout the nation  
4 about PM10 attainment. We expect PM10 attainment  
5 plans to come out of those -- excuse me, PM2.5  
6 attainment plans to come out of those monitoring  
7 data.

8 Generation -- combustion, PM10, it's  
9 predominately PM2.5; therefore, the generation  
10 sector may have a bigger contribution to PM10  
11 inventories and also PM10 attainment.

12 Then again, I think the debate about  
13 out-of-state generation is an important debate.  
14 I'm not sure I have an answer at this point in  
15 time about that.

16 And that concludes my remarks.

17 DR. TOOKER: Chris Tooker, again. Matt,  
18 very early on in your presentation you were  
19 talking about retrofit rules. Are the current air  
20 district rules requiring that those facilities  
21 that you talked about being uncontrolled at this  
22 point either shut down or be retrofit, or are they  
23 still allowing them to make determinations of  
24 giving them say a certain minimum number of hours  
25 a year that they can continue to operate

1       uncontrolled?

2               MR. LAYTON:  The units that were exempt  
3       from the last retrofit rules most likely have  
4       limits on the hours of operation per year.

5               DR. TOOKER:  So districts are still  
6       allowing them to continue uncontrolled for limited  
7       hours?

8               MR. LAYTON:  Yes.

9               DR. TOOKER:  You don't see that  
10      changing?

11              MR. LAYTON:  It really depends on the  
12      district and the attainment status of the  
13      district.  And the cost effectiveness of those  
14      control and productions.

15              If you --

16              DR. TOOKER:  For instance in the San  
17      Joaquin Valley where they have severe  
18      nonattainment problems, I would think that they  
19      would be getting close to the point of saying  
20      everybody has to retrofit regardless of how much  
21      they're used.

22              MR. LAYTON:  They are starting retrofits  
23      there.  They've actually implemented the rule,  
24      which are achieving significant reductions.  But I  
25      think the peakers throughout the state are, I

1 think, the most interesting question. Because  
2 they are -- have high utility at certain times of  
3 the year. But the emissions are so low on an  
4 annual basis the cost effectiveness may not be  
5 there.

6 But San Joaquin, as I say, is already  
7 pursuing retrofits on a lot of the combustion  
8 turbines that they have.

9 DR. TOOKER: I think in breaking these  
10 things down and looking at them regionally or by  
11 district it would be good to know what you expect  
12 is going to happen in these severe nonattainment  
13 areas with these retrofit rules. Whether, in  
14 fact, they're going to allow them to continue to  
15 operate uncontrolled for a certain minimum hours,  
16 or whether they're finally going to shut them  
17 down -- require them to shut down or put controls  
18 on them.

19 MR. ABELSON: My name is David Abelson;  
20 I'm Senior Staff Counsel here at the Commission,  
21 and assigned as attorney for the Integrated Energy  
22 Report.

23 Matt, I was struck by a couple of things  
24 in your presentation, and I was wondering if  
25 either you or perhaps any of the Commissioners

1 might have any thoughts on these observations.

2           You've repeatedly said that the  
3 generation system in California is, your term,  
4 clean. And yet when you went over the CO2 issue,  
5 which I understand is not strictly speaking a  
6 pollution issue, you indicated that the generation  
7 system may account for as much as 16 percent of  
8 CO2 emissions.

9           First of all, was that instate only when  
10 you talked about 16 percent?

11           MR. LAYTON: Yes, it was.

12           MR. ABELSON: So, if I heard you  
13 correctly, the by-wire from coal or from out of  
14 state is another 6000 megawatts, is that --  
15 something along those lines -- do we know what the  
16 percentage of CO2 emissions then collectively for  
17 California's generation system would be, counting  
18 the out-of-state coal?

19           MR. LAYTON: I don't know the number but  
20 it's available in the last PIER report on CO2.  
21 They specifically looked at that. I do not know  
22 that number.

23           MR. ABELSON: Would I be correct in sort  
24 of inferring from the numbers you have given that  
25 it's probably in the 30 to 40 percent range

1 overall?

2 MR. LAYTON: I think -- I don't know the  
3 numbers.

4 MR. ABELSON: Okay. So, clean is -- I  
5 mean I think it's important for us to constantly  
6 make clear the difference between clean in a  
7 traditional air pollution health perspective,  
8 since the word clean in the sense of greenhouse  
9 gas emission issues, because it may not be that we  
10 have a very clean system from the latter.

11 The second observation is just a  
12 practical one that I felt, having served as an  
13 attorney for some siting cases, and this is the  
14 dilemma that I sense the citizens feel. When we  
15 say that the system is clean and the statistics  
16 would support us on that, again in a conventional  
17 sense of the definition, I always get the  
18 impression that citizens don't understand the  
19 cumulative nature of air quality problems.

20 That when you look at the South Coast  
21 Air Basin it's hundreds of thousands, maybe even  
22 millions of cars, and people's Webbers, and the  
23 power plants, too. And that it's only all those  
24 things together that create an ozone problem.

25 And I guess I'm sort of struck by a

1 deficiency in our job in government, which is in  
2 one of two ways. Either we're not doing a very  
3 good job of helping local people understand that  
4 difference, and maybe we could do better, or maybe  
5 even if they did understand it, the fact that the  
6 stack is next to their house, the old NIMBY  
7 syndrome.

8 I mean how would I feel if someone like  
9 Matt Layton came to me and said I'm going to put a  
10 power plant stack next to your house, and trust  
11 me, with the dilution factor, it's really not  
12 going to bother your kids much.

13 And so the corollary question to that is  
14 can we do a) a better job of explaining the  
15 dilution cumulative impact issue. And/or should  
16 we, as a matter of policy, have some kind of  
17 compensation locally, even though there are no  
18 direct health impacts. There's at least this sort  
19 of psychological burden that's being put on the  
20 people where the plant is that none of the rest of  
21 us have to bear, because it's not in our back  
22 yard.

23 So these are just observations, but I  
24 wanted to kind of offer them before the air  
25 quality section, you know, wraps up today.

1                   COMMISSIONER GEESMAN: Well, I guess I'm  
2 reminded of Tip O'Neill's comment, David, that all  
3 politics is local. A lot of pollution is local.  
4 And I guess I'd extend the same generalization to  
5 a lot of psychological burden is local, as well.

6                   I think we'd be better off if we did  
7 have the ability to focus more in this type of  
8 analysis on localized impacts.

9                   But I should say from the standpoint of  
10 my experience in I think three siting cases, each  
11 of which has been a gas-fired facility, there's  
12 been a remarkable lack of local resistance or  
13 opposition to the air quality impacts in each of  
14 those cases.

15                  So, I'd hesitate to generalize as to the  
16 difficulty of finding acceptable sites in  
17 California, even in California's urban areas, for  
18 gas-fired projects. But I do believe that the  
19 debate would be better informed if we were able to  
20 put a better handle in this type of report on  
21 localized impacts.

22                  COMMISSIONER BOYD: I would comment that  
23 I think in the more major metropolitan areas, the  
24 air districts and affected publics probably are  
25 better informed because of years and years and

1 years of activity. But in the middle to lesser  
2 districts I would agree that there probably is an  
3 absence of knowledge. Although I'd like to trade  
4 power plant cases with you, because --

5 (Laughter.)

6 COMMISSIONER BOYD: -- in the ones that  
7 I'm engaged in right now, at least one in  
8 particular, local air quality is, you know, a huge  
9 issue and cumulative impacts are being debated by  
10 a very vocal community.

11 But, in any event, it's an age-old  
12 dilemma. And I think we have a real problem. I  
13 mean back in the days when better land use  
14 planning decisions might have affected how, you  
15 know, where subdivisions were put, put up against  
16 fencelines of industrial areas, you might have had  
17 a chance.

18 Now, as I joked earlier, there is no  
19 middle of -- there's virtually no middle of  
20 anywhere in California, although I've driven  
21 through a couple of them lately that there doesn't  
22 seem to be anything there. But there's also no  
23 transmission grid.

24 It is hard, and nobody wants something  
25 in their backyard. Some people like tall stacks,



1 the dilution; the solution to pollution is  
2 dilution. But they tend to forget that it does  
3 come down somewhere or it does create emissions  
4 somewhere else.

5 So, it's really, I would agree it's a  
6 major issue and will continue to be a major issue  
7 as long as our population continues to grow. And  
8 we need to have an industrial base to support that  
9 population; and we need to have, you know,  
10 electricity to support that economy.

11 You're going to be wrestling with this  
12 long after I've left this forum.

13 CHAIRMAN KEESE: Mr. Kelly, can I get a  
14 clarifying question here -- Matt?

15 It seemed to me the issue was from a  
16 previous question were we facing additional  
17 deadlines which would cause plants to shut down  
18 because they didn't meet the standard.

19 Am I right in the Bay Area that there  
20 are additional dates coming up, there are  
21 deadlines by which plants either will clean up or  
22 shut down?

23 MR. LAYTON: The retrofit role in the  
24 Bay Area, it started in '97, and the final date is  
25 January 2005. They had an option, the owners had

1 the option of either retrofitting certain units or  
2 applying a systemwide cap, instantaneous cap,  
3 pollution cap on a pounds per million Btu.

4 So, yes, certain decisions will have to  
5 be made about some of those plants because as some  
6 plants are retrofitted you may be able to run the  
7 clean plants in conjunction with a dirtier plant  
8 and the system average comes out to satisfy the  
9 rule.

10 As the rule has decreased, or the limit  
11 has decreased over the years, it's a lot more  
12 difficult to do that. So there may be decisions  
13 being made where they have to actually retire and  
14 not run a unit.

15 CHAIRMAN KEESE: So this is another  
16 example of what Commissioner Geesman was asking  
17 us, I guess, that for some of these analytical  
18 areas a regional or more local view is going to  
19 yield different results than a statewide?

20 MR. LAYTON: I think the -- not really,  
21 because the system averages, I think, are very  
22 important. Those system averages reflect all  
23 those units that contribute to that system  
24 average. And as units retire or units are  
25 retrofitted, the system average gets cleaner,

1       which I think is good.

2               CHAIRMAN KEESE: But the rules are  
3       different in different regions.

4               MR. LAYTON: Right. And at the same  
5       time we're trying to come up with a pounds per  
6       million Btu or a footprint for these units, so  
7       you, as a consumer, know that if you turn on your  
8       light you're emitting so many pounds of NOx.

9               I think that's a good thing to know.  
10       It's average because you, when you live in SMUD,  
11       may rely a lot on hydro, where someone in San  
12       Diego doesn't have much hydro, therefore they rely  
13       more on imports and generation instate. But, on  
14       average, this is how many pounds of NOx they  
15       produce.

16              I guess the trend is important. As  
17       things get cleaned up, we expect that our system  
18       is going to get cleaner and cleaner which I think  
19       is a benefit to all of us.

20              CHAIRMAN KEESE: Thank you.

21              MR. KELLY: Steve Kelly with IEP again.  
22       And just my observation, though, on this is that  
23       when I look at the trends I think the state and  
24       generation community has done a good job in  
25       cleaning up its sector. You can see the trend

1 line; as you pointed out it's very clean.

2 I think we have a tendency when we focus  
3 in on generation, it's easy to focus in on because  
4 there's relatively few of them, 800 or so. They  
5 have high stacks. Everybody sees them. So  
6 there's a tendency to go after, to clean up the  
7 next increment. And at some point we'll get to  
8 the point where that next increment is just going  
9 to be -- we need to evaluate the cost  
10 effectiveness of that.

11 I think for some of the plants that are  
12 out there that are dirty, they are going to be  
13 facing choices about investing tens of millions of  
14 dollars on retrofit, or shutting down. And quite  
15 frankly, in the absence of having some sort of  
16 long-term contract to recover that cost, I think  
17 they will shut down, which may have reliability  
18 impacts.

19 As we ratchet down the requirements on  
20 the limited number of generators I think we will  
21 end up exporting this problem out of state. And  
22 then having to bring it in through wires, which  
23 has its own environmental impacts that need to be  
24 weighed against air quality.

25 It gets very complicated when you get

1 down to that. So, you know, the next step is  
2 going to be very difficult for us to deal with  
3 analytically. But, the message that I get today  
4 is over the last eight to ten years there has been  
5 a significant improvement. And the state should  
6 lay claim to that, for having done that.

7 And there's a lot of causes, as was  
8 pointed out, for the air pollution impacts, it's  
9 cumulative. But in the generation sector there  
10 has been some significant improvement. And I  
11 don't think the citizens of the state understand  
12 that.

13 So, one of the messages that we might  
14 do, while there's always room for more  
15 improvement, is to point out the fact that this  
16 sector or this body has done a great job in  
17 improving those impacts over time, statewide.

18 MS. NELSON: Natasha Nelson in the  
19 environmental office. I'll be giving a  
20 presentation right after, so I just wanted to set  
21 up one factor.

22 When SCR is installed on a power plant  
23 the ammonia emissions go up, is that correct? So  
24 you traded nitrogen oxide for NH3?

25 MR. LAYTON: That's true.

1 MS. NELSON: And is it not true that  
2 many of the power plants -- that most of the  
3 nitrogen deposition is actually from the ammonia  
4 and not so much just the day-to-day operation of  
5 the power plant? It's the SCR --

6 MR. LAYTON: The nitrogen deposition  
7 comes both from the NOx emissions from the stack  
8 and also from the ammonia slip out the stack when  
9 the SCR is used. It's really hard to say which is  
10 the dominant contributor.

11 MS. NELSON: Yeah, I have seen figures  
12 at 80 percent of the nitrogen deposition came from  
13 ammonia from certain power plants.

14 MR. LAYTON: I guess I would be  
15 interested in seeing that.

16 MS. NELSON: Yes. So do you think that  
17 ammonia emissions are going to go down on a per  
18 megawatt basis the same way that you say, you  
19 know, or are they expected to go up as more plants  
20 become more retrofit?

21 MR. LAYTON: I think the ammonia  
22 emissions can be controlled. We've seen the  
23 ammonia limits on the power plants decrease. And  
24 we have seen out of state where the performance is  
25 becoming almost zero ammonia emissions.

1           The potentials there, there are cost  
2       issues associated with adding additional ammonia  
3       controls, and also performance issues associated  
4       with that. But I think ammonia, as a precursor of  
5       particulate matter and PM2.5, in particular, is  
6       going to be an important issue in the power plant  
7       sector. The ozone numbers in the state are still  
8       very bad, therefore NOx is a primary concern. But  
9       as PM10 and PM2.5 start to garner their share of  
10      attention, I think the ammonia emissions from  
11      power plants will be looked at again.

12           MS. NELSON: Thank you.

13           COMMISSIONER GEESMAN: And would you  
14      include ammonia slip from cooling towers in that  
15      assessment, as well?

16           MR. LAYTON: The use of reclaimed water  
17      may contribute some ammonia, yes.

18           MS. DeBONO: I'm Teresa DeBono with PG&E  
19      Power Generation. And I wanted to comment on the  
20      air emission section.

21           The one thing that we do when we monitor  
22      the environmental performance of our own  
23      facilities on a year-to-year basis is we look at  
24      the emissions generated on a megawatt hour basis  
25      based on the energy produced for that particular

1 year.

2 And then we compare that, not just using  
3 capacity of what we have available, but what  
4 actually was used in production for that year.  
5 And then we can compare that nationally and with  
6 other facilities to see how well we're doing and  
7 improving.

8 And I think what we're seeing is the  
9 improvement we're getting in emissions reductions  
10 is because we have a diverse portfolio. And it's  
11 not just because we have more strict controls on  
12 our natural gas units.

13 So it would be good to have this section  
14 reflect what is the contribution of the other  
15 resources that you have in your portfolio in terms  
16 of keeping air emissions down in the generation  
17 sector. It's not just from the natural gas-fired  
18 or the fossil fuel-fired controls, but because you  
19 have a diverse portfolio available in California.

20 But there's no discussion of that in  
21 this section. For example, nuclear, hydro, solar,  
22 those kinds of things are not discussed in this  
23 section. It's just strictly related to the  
24 fossil-fired fuel units.

25 MR. LAYTON: That's correct, this is the



1 footprint, the emissions footprint of those  
2 fossil-fired units. So the (inaudible) hour for  
3 example for NOx is based purely, only looking at  
4 the megawatt hours generated by the fuel-fired  
5 sector. Do not include the nuclear and the hydro.

6 The number would be much less on a  
7 pounds per megawatt hour basis if you included  
8 those other resources.

9 MS. DeBONO: That's right, I think  
10 that's why California has a cleaner energy sector  
11 than other states is because of that diverse  
12 portfolio that you have. I think it would be good  
13 to include that information in this section.

14 MR. LAYTON: Again, the comparisons were  
15 only to power generation out of state, so we are  
16 comparing apples and apples. We're not including  
17 the portfolio out of state.

18 MS. DeBONO: Thank you.

19 MR. McKINNEY: Thanks, Teresa; I think  
20 that's a point well taken.

21 MR. POWERS: Bill Powers, Border Power  
22 Plant Working Group. I do appreciate Commissioner  
23 Geesman's question about the ammonia emissions  
24 from the cooling towers. I stand ready to help  
25 the California Energy Commission deal with that

1 issue.

2 But I just wanted to make a very -- just  
3 a technical point. In your writeup you mentioned  
4 that the Encina Power Plant has applied for a  
5 variance for SCR for the five boilers there. As  
6 of June of this year all five boilers were  
7 equipped with operational SCRs. In fact, all nine  
8 utility boilers in San Diego County now have  
9 operational SCRs.

10 MR. LAYTON: Good.

11 MR. MCKINNEY: Hey, Matt, I wanted to go  
12 back to one of your slides when you talked about  
13 the lack of data for the cogen sector. And I  
14 think you said that was about one-third, one of  
15 your charts there.

16 In your view how do we get at this  
17 information? Is that something that just takes  
18 more time and diligence, or is there a need to be  
19 some type of rule change or policy change, or how  
20 do we get there from here?

21 MR. LAYTON: The data's available; the  
22 air districts collect this data for the most part.  
23 The problem we have is it's very handy to go to a  
24 national database on the -- acid rain database  
25 which has the power plant production and

1 emissions.

2           The problem is that doesn't include all  
3 the power plants. There's about 1000 power plants  
4 in the state. Trying to make sure we capture all  
5 those power plants that in generation for that  
6 year, those emissions that year, and the retrofits  
7 that have occurred, because the databases don't  
8 seem to keep up with the retrofits. That's the  
9 difficulty.

10           I think the data's available; it's a  
11 matter of extracting it and putting it into a  
12 workable database such that you could break it  
13 down by air basins and also capture a moving  
14 trend.

15           MR. KENNEDY: One thing that I would  
16 like to add is that actually in the preparation of  
17 early drafts of this report a lot of time and  
18 effort, particularly by Joe Loyer and other folks  
19 in the air quality unit, went into trying to get  
20 the existing data into a state where it could be  
21 presented at that sort of level. Some of that may  
22 end up being presented in the appendices to this  
23 year's report.

24           But just the question of consistency,  
25 being able to compare year to year, district to

1 district, power plant to power plant, to some  
2 degree, proved to be very difficult. And also  
3 questions about sort of what level of detail was  
4 appropriate for the main body of the report.

5 And if we ended up deciding to pull back  
6 on some of the regional information that actually  
7 had been in one of the earlier drafts. So that's  
8 something that I think will be reappearing, at  
9 least in the appendices, as we move forward this  
10 year. And certainly something we'll be looking at  
11 trying to improve the data available for 2005.

12 Any other questions or comments on air  
13 quality?

14 Okay. At this point I think we have a  
15 decision to make about whether to break at this  
16 point for lunch and come back at something like  
17 quarter of one in order to pick up with biology.  
18 Or to move on to the biology discussion, which I  
19 suspect will, with the level of discussion and  
20 comments we've been having so far, go a good 45  
21 minutes or an hour.

22 Perhaps deferring to the Commissioners  
23 for their preferences.

24 COMMISSIONER BOYD: You got a coin?

25 (Laughter.)

1           MR. KENNEDY: That's about where I'm at  
2           on it, too. Perhaps maybe we should defer to  
3           Natasha. Would you rather have a break for lunch,  
4           or would you rather go ahead and go into it now?

5           MS. NELSON: I would rather do it now so  
6           that I can check on (inaudible).

7           MR. KENNEDY: Okay, so unless anyone has  
8           an objection to that, we will move on to biology.  
9           Natasha Nelson.

10          CHAIRMAN KEESE: That's probably good --

11          COMMISSIONER BOYD: We'll do biology and  
12          then we'll break.

13          MS. NELSON: As I said before, I'm  
14          Natasha Nelson; I'm in the biological resources  
15          unit. And our team wrote this report section.

16          The topics that we put in our outline to  
17          cover were habitat loss from energy production.  
18          The once-through cooling and nitrogen deposition  
19          trends, hydropower impacts and renewable energy  
20          impacts. But today I'll only be covering wind  
21          energy for renewable energy impacts. Transmission  
22          line and natural gas pipeline impacts, both what's  
23          currently in the system, as well as what could be  
24          in the system depending on what is brought online  
25          in the future. And out-of-state power impacts.

1           Many of the findings from the 2001  
2       report are still relevant today. Most of the  
3       power plants and ancillary facilities were built  
4       before environmental regulations such as the Clean  
5       Water Act, the Endangered Species Act. And they  
6       were not held to environmental standards. And as  
7       a result we have many unmitigated losses that are  
8       being perpetuated.

9           While the majority of the original steam  
10      power power plants were in coastal areas where  
11      once-through cooling using ocean or bay water was  
12      available, most of the new power generation is  
13      instate and does not use once-through cooling.

14           Regional and countywide habitat  
15      conservation plans are being approved by the U.S.  
16      Fish and Wildlife Service, and are becoming more  
17      common in real inputs to conditions of  
18      certification the Energy Commission places on  
19      licenses.

20           The last three findings are the impacts  
21      to birds from collisions with turbine blades at  
22      windfarms are high in certain wind resource areas.  
23      And no mitigation is available to stop them.

24           Hydropower operations cause significant  
25      and non-mitigated impacts to aquatic ecosystems,

1 as Jim related to earlier, throughout California.  
2 And finally, oil- and natural gas-fired power  
3 plants disturb less area than renewable power  
4 plant facilities on a per megawatt capacity basis.  
5 That is how we were measuring the footprint.

6 So, let's first look at habitat loss.  
7 Power generation development from 1996, which was  
8 the baselines for this report, through 2002, used  
9 approximately 3900 total acres of land. For the  
10 18 projects that were permitted by the Energy  
11 Commission, there was approximately 225 acres of  
12 habitat loss, accounting for the power plant  
13 footprint and its linears. There are currently  
14 462 acres licensed.

15 By 2002 about .12 percent of our state,  
16 or 10,500 acres, was in direct energy production,  
17 providing the capacity of 57,000 megawatts. We  
18 also, as the biologists, wanted to look at the  
19 lands used for fuel production and storage, or  
20 when energy facilities -- off open space.

21 If all the related reservoirs, landfills  
22 and open space between windfarm turbines are  
23 counted as energy-related land use, almost 3.5  
24 percent of the state is being used in some manner.

25 We'll also be accounting for natural gas

1 and geothermal wells production fields, hopefully  
2 in the 2005 report, which may increase this number  
3 once again.

4 This leads to the question of which fuel  
5 type uses the most land, and which fuel uses the  
6 land most efficiently. In my next slide this is a  
7 simplified version of the graph you'll find in the  
8 report. But here we see that coal, geothermal and  
9 oil- and gas-powered plants in the center -- I  
10 don't have a pointer. I guess -- I realize right  
11 now -- have ratios that are less than one, which  
12 means that they produce more power than they take  
13 up acres.

14 But hydropower, when you count the  
15 reservoir, uses the most land of any of our fuel  
16 types, to make one megawatt of power. If you  
17 don't count the reservoirs, it does dip  
18 substantially, the pink box, to also a ratio of  
19 less than one.

20 Next environmental efficiency, which  
21 we're working toward quantifying in this report  
22 and also will continue to refine. So don't take  
23 these numbers as final today.

24 Once-through cooling trends. Overall,  
25 intakes and outfalls located in fairly closed



1 systems such as a bay or estuary are more likely  
2 to have significant entrainment impacts than  
3 similar intakes located in an open system, such as  
4 the Pacific Ocean.

5 Entrainment, for anyone who is not  
6 familiar with that, is when the fish or other  
7 aquatic systems are brought in through the  
8 turbines, are basically cooked and then sent back  
9 out.

10 No once-through cooling power plants  
11 have been built in new locations within California  
12 since the 1970s. However, the Commission has  
13 recently reviewed five applications for  
14 certification for repowering and modernization,  
15 and two of those are in operation now, using once-  
16 through cooling.

17 Overall the trend in 316(b) regulations,  
18 which regulate new intakes and outfalls, is to  
19 establish nationwide intake velocity requirements,  
20 as well as location-based requirements, to  
21 minimize impingement and entrainment impacts.  
22 Regulations for existing intakes are still in  
23 review. This is only for new intakes.

24 Nitrogen deposition, as I was speaking  
25 about to Matt before, from new power plants or

1 repower projects have the potential cumulative  
2 impact if the power plant is in the vicinity of  
3 nitrogen-sensitive habitats, such as serpentine  
4 soils, which are found in Santa Clara County and  
5 desert communities.

6 That's why the Energy Commission has  
7 required mitigation for stack emissions in  
8 locations such as Santa Clara County, which you  
9 can see here, where grazing was required on the  
10 right-hand side of the fence, and no grazing on  
11 PG&E land on the left-hand side of the fence.

12 Potential nitrogen deposition impacts  
13 from new power plant proposals is emerging as an  
14 issue of concern to the Energy Commission Staff as  
15 well as federal land managers near power plants.

16 Hydropower impacts I'll just cover  
17 briefly. There are many. Salmon or steelhead  
18 habitat is found at hydropower facilities in the  
19 Sacramento River, San Joaquin River and on the  
20 north coast. But very few of California's  
21 hydropower projects have adequate fish passage for  
22 migrating salmon and steelhead.

23 Hydropower impacts to salmon, steelhead  
24 and native trout are continuing to be significant.  
25 This can be changed during the upcoming years when

1 37 percent of California's hydropower systems will  
2 be relicensed by the FERC between 2000 and 2015.  
3 We can address and mitigate impacts to salmon,  
4 trout and other species during that process.

5 Again, we did cover all renewables, but  
6 for wind turbine impacts, the largest single issue  
7 continues to be bird strikes with the turbine  
8 blades. At existing wind farms with high bird  
9 collision incidents there's no mitigations that  
10 are known to reduce bird fatalities.

11 As more repower facilities come back  
12 online the total amount of rotor swept area, which  
13 is basically diameter 2-Pi-R, questions are going  
14 to increase, the main considered contributory to  
15 bird fatality risk.

16 As you can see here in Palm Springs  
17 these new turbines are much bigger and taller, and  
18 there's fewer of them, but they have the same  
19 rotor swept area as the many small ones which you  
20 see in the background.

21 Transmission lines and natural gas  
22 pipelines are located mostly in urban and  
23 agricultural areas to serve the load, but many  
24 cross the Mojave Desert and a few cross the  
25 forested regions in northern and eastern

1 California where their impacts are amplified.

2 Some of California's rarest natural  
3 communities, including a variety of Central Valley  
4 vernal pool types and coastal communities are  
5 within 1.2 miles of transmission lines or natural  
6 gas pipeline systems as it exists today. Any new  
7 transmission line projects have the possibility of  
8 degrading these sensitive community types, as well  
9 as federally or state listed species.

10 I'll note that since 1996 there has been  
11 a doubling of federal listings and critical  
12 habitats in our state. We've grown from 190 to  
13 380. It is much more likely that these  
14 transmission line corridors and natural gas  
15 pipelines are going to come across a federally  
16 listed species or its habitat.

17 Another concern with these linear  
18 features is they can cause wildfires. And between  
19 1996 and 2002 we found the number of wildfires has  
20 decreased from 284 to only 181.

21 The final two findings I'll present  
22 today is because most of California's threatened  
23 and endangered species occupy small habitat  
24 ranges, energy development projects have the  
25 potential to cause impacts when they're built

1 nearby.

2 The use of previously disturbed lands  
3 for energy production can minimize such effects,  
4 especially if they're in an area of low  
5 biodiversity.

6 Staff suggests that building integrated  
7 solar photovoltaic and biogas-fired electric  
8 generators at landfills or at sewage treatment  
9 plants have the least risk of loss to biological  
10 resources. Other renewable energy types such as  
11 in-forest fuels still need research and careful  
12 planning to avoid biological impacts.

13 Out-of-state power plants have impacts  
14 to local areas, but we recognize they do impact  
15 air and water quality. For instance, the Mexican  
16 power plants we spoke about today and their  
17 impacts to the Salton Sea in Imperial County were  
18 analyzed by the BLM. They did find them to be de  
19 minimis and only a .14 percent increase in  
20 salinity at the Salton Sea as a result of  
21 operation of both the Semptra and Energen plants.  
22 And you'll find more about that in my section.

23 The major issues that I thought we'd  
24 discuss today, mitigation of aquatic impacts from  
25 once-through cooling continues to be controversial

1 environmental issue, and we require case specific  
2 information. This is typically called a 316(b)  
3 study.

4 Agencies are seeking to restore salmon  
5 and steelhead fisheries during relicensing of  
6 hydropower facilities after years of impacts, and  
7 this is an important opportunity for people to  
8 speak out.

9 Case-specific information is needed to  
10 evaluate the impact from nitrogen deposition.  
11 Better modeling and understanding of the  
12 constituents.

13 Installation of transmission lines and  
14 natural gas pipelines may be restricted near areas  
15 of high biological value. This is, for instance,  
16 at a refuge. But we've already seen this in some  
17 of the CPUC cases.

18 Renewable energy facilities and their  
19 associated linears have impacts that should be  
20 researched and evaluated before cities and  
21 municipalities decide to adopt them as part of  
22 their portfolio.

23 I'm open for questions. Thank you.

24 MR. KENNEDY: Before we get into  
25 questions from the audience I want to mention that

1 we did receive this morning a letter from Tom  
2 Luster at the California Coastal Commission.

3 Tom indicated that he wasn't able to  
4 attend today because of other workload that he is  
5 facing. But he did provide comments primarily  
6 focused on questions of once-through cooling  
7 impacts.

8 One suggestion he made, as well, is that  
9 the environmental performance report should  
10 include some discussion of the emerging issue of  
11 locating desalination plants at coastal power  
12 plant facilities. I think that's something that  
13 we most likely will be able to do, not in any  
14 detail, but some mention of that as an emerging  
15 issue that needs to be continued to look at.

16 His other comments mostly relate to  
17 concerns about -- that the Coastal Commission has  
18 had about the continued use of once-through  
19 cooling at power plants. I know that the  
20 Commissioners are very familiar with these issues.  
21 It's something that has been an ongoing issue in a  
22 number of active siting cases. And there's a  
23 number of places where he suggests some additional  
24 language to reflect the Coastal Commission  
25 concerns in the report.

1           And I think this is one area where  
2       there's been a lot of controversy, a lot of  
3       concern, in individual siting cases, and a lot of  
4       balancing that needs to go on in dealing with the  
5       question of the continued use of once-through  
6       cooling in repowered power plants.

7           And one of the things that I think the  
8       Commissioners are likely to be thinking about in  
9       terms of where that balancing is best to occur.  
10      It has been occurring on a case-by-case basis, and  
11      there's both advantages and disadvantages to that.

12           I don't know whether or not the  
13      Commissioners have anything to say on that issue  
14      today, but we'll see whether anyone does; and then  
15      open it up to the --

16           COMMISSIONER BOYD: Well, I just would  
17      say you've touched a good point, but it suddenly  
18      makes me think therefore, also of the potential  
19      for LNG facilities being sited in California as an  
20      associated energy, where the desal is related  
21      because of the potential synergism between a power  
22      plant and that facility. LNG may or may not  
23      become a significant source of the natural gas  
24      that our electricity report talked about so  
25      dependent and more dependent upon natural gas.



1           That's something else perhaps we need to  
2     think about.

3           CHAIRMAN KEESE: I was going to bring up  
4     the issue that you've raised, myself. And I think  
5     that what I have noticed in our siting cases is  
6     that the hiatus we had in siting major facilities  
7     during the '90s, and actually during somewhat the  
8     late '80s, because we moved to the renewables,  
9     caused a hiatus in the studying of the impacts of  
10    major facilities. And perhaps a little more so on  
11    coastal issues than on new greenfields.

12           But in the last three, four, five years  
13    the science in the aquatic impact area, the  
14    science on ammonia slip, the science on a lot of  
15    these different areas has made strides so that  
16    what we knew in siting cases four years ago is now  
17    dismissed today and replaced with advancing  
18    science.

19           I concur that the decisions have to be  
20    made on a case-by-case basis. But I believe the  
21    issues, the technical issues on ammonia slip or on  
22    NOx levels, or on SCONOx should move, at some  
23    point, to the siting committee for consistency.

24           I think it's going to be important that,  
25    and I think the timing will probably be right, as

1 the bulk of the cases, this huge workload of  
2 licensing cases has moved through the system, has  
3 identified the issues. And I think the issues can  
4 include visual impacts. And in some case perhaps  
5 even transportation.

6 I think those issues should be dealt  
7 with in some generic forum where we set the  
8 template for how we're going to deal with cases on  
9 an individual basis. I think the decision will  
10 always have to be made case by case, but I think  
11 we really don't have an adequate system here to  
12 assure consistency among all our decisions. We're  
13 trying to become consistent on an ad hoc basis,  
14 which is not the best of all worlds.

15 COMMISSIONER GEESMAN: I've not sat on a  
16 coastal siting case, so I have no specific  
17 knowledge of this issue. Some generic knowledge.  
18 And I guess I have two general questions.

19 One being whether there is any  
20 significant variation on impact from once-through  
21 cooling among the different coastal sites that are  
22 potential candidates for repowering. And I guess  
23 I'd expand that to include not just coastal sites,  
24 but any that may be on estuaries or fresh water  
25 sites.

1           And secondly, I note from Mr. Luster's  
2       written submittal the view, one of his recommended  
3       changes is that you include language, the  
4       continued use of once-through cooling at six  
5       coastal and estuarine plant sites that are being  
6       repowered will perpetuate adverse and significant  
7       impacts to the marine environment.

8           Is it the Energy Commission Staff's  
9       position that all such impacts are adverse?

10          MS. NELSON: I'm in the same position; I  
11       did not work on a once-through cooling power  
12       plant. But Dick Anderson has. And staff's  
13       recommendation continues to be that these are  
14       impacts that significantly impacting the  
15       population of fish and invertebrates offshore.  
16       And that are best mitigated by avoidance as your  
17       first step.

18          COMMISSIONER GEESMAN: Yes, but are  
19       you --

20          MS. NELSON: The variation is very hard  
21       to get to because most of those power plants are  
22       not required to collect the data necessary to make  
23       an evaluation.

24          COMMISSIONER GEESMAN: I wasn't aware of  
25       that.

1 MS. NELSON: And so we have sporadic  
2 data on the five power plants. Of the five power  
3 plants we looked at, only four of them completed  
4 the data where we could have made that  
5 determination.

6 COMMISSIONER GEESMAN: And that's data  
7 gathered for our siting process, itself, as  
8 opposed to some historical reporting?

9 MS. NELSON: The reporting is for the  
10 Clean Water Act, 316(a) and (b) sections. And  
11 then that is what the USEPA uses to make their  
12 permitting.

13 But how often are those permits renewed?  
14 Every five years. So it depends on when they come  
15 to us for their repower application as to whether  
16 it's been just one year since they've collected  
17 data, or it may have been five years since they  
18 collected data.

19 CHAIRMAN KEESE: And none of the  
20 existing coastal facilities were licensed. There  
21 was no licensing process when they were built. So  
22 we wind up with a lack of a database. And then  
23 information that is peripherally useful, it's  
24 not -- it's for another purpose, and we attempt to  
25 tie it into our sites.

1           But I would say, having had a few  
2       coastal cases, they are generally extremely  
3       diverse as compared to land-based facilities.  
4       There's a great deal of differentiation. But  
5       there are common issues.

6           MR. HAUSSLER: This is Bob Haussler,  
7       environmental office. I would like to say that  
8       one of the difficulties that we have had, it's  
9       been alluded to, in addressing the impacts of  
10      coastal power plants is that little work was done  
11      on those plants in an intervening period from  
12      about the early '80s on some of them, to mid '70s  
13      on others, regarding entrainment and impingement  
14      issues with withdrawal of cooling water.

15           These existing plants, which we've  
16      received within applications for repowering, have  
17      been all considered while the facilities have been  
18      revised and added to or removed and new units  
19      built, all considered existing facilities and  
20      intake discharges.

21           As a result there currently are no  
22      regulations that apply with respect to 316(b),  
23      which was entrainment of organisms, and as was  
24      mentioned, cooking.

25           The regulators, that is EPA and the

1 State Water Resources Control Board and its  
2 regional boards, really were looking to EPA to  
3 promulgate regulations for quite some time. And  
4 as a result, their expectations were that they  
5 would have data and be required to address this in  
6 each of the five-year intervals when they do get a  
7 revised new NPDES permits.

8 But because the regulations weren't  
9 developed during this period up until now, for  
10 existing facilities, this has kind of ended up at  
11 the Energy Commission's doorstep. And while I  
12 believe we've done the best we can, we've by no  
13 means done what should have been done with respect  
14 to the level of information we could apply to  
15 this.

16 The ocean system is very complex. It  
17 changes from year to year. For instance, we have  
18 climate change related issues and no two years are  
19 the same. So usually the data is necessary for  
20 more than one year. And we've been able only to  
21 get information for just a year period upon which  
22 to base our decisions.

23 So we've made them as good as we can.  
24 But the staff does feel that there are  
25 deficiencies in regards to how we've been able to

1 address these issues. And typically has  
2 recommended alternatives to cooling to the  
3 Commission, given the lack of really thorough  
4 evaluation that's been able to occur within our  
5 process.

6 MR. McKINNEY: If I could add a little  
7 bit to this discussion here. This was an issue  
8 identified in the '01 report as an area of concern  
9 to staff, and obviously for the Commission, as  
10 well, as part of our coastal plant study which we  
11 promise we will finish after EPR, IEPR.

12 There is an element in that, and I see  
13 we've got Joe and Dick and Jim Brownell here, too.  
14 But one of the things we're trying to do in that  
15 is really say develop a good methodology for  
16 collecting the data that can be used at each of  
17 the coastal sites, so we have some of this kind of  
18 unified, systematic approach and get the  
19 information needed to make an informed decision.

20 MR. KENNEDY: Dave.

21 MR. ABELSON: Thank you. David Abelson  
22 with the Energy Commission. Let me just offer a  
23 couple of comments on the last dialogue from some  
24 information that I have. And I have a question  
25 for Natasha.

1 I worked as the attorney for the first  
2 environmental performance report 2001 with Jim and  
3 others. And in that report, Commissioner Geesman,  
4 the staff, and then the Commission, by unanimous  
5 vote, did determine that once-through cooling is  
6 adverse, significant and continuing at existing  
7 plants. That was the finding of the full  
8 Commission two years ago.

9 In the interim period my understanding  
10 is that in the coastal cases that we have been  
11 handling, while there is debate oftentimes about  
12 the appropriate remedy, the science, which the  
13 Chairman indicated, has advanced quite a bit in  
14 the last few years, has consistently found very  
15 serious impacts from once-through cooling.

16 The question that I have, Natasha,  
17 actually is a clarification. I may have  
18 misunderstood something, or perhaps I'm in error,  
19 but back in even your first or second or third  
20 slide you were showing the percentage of land  
21 impacted by power facilities.

22 You had both a percentage of 3.5 percent  
23 and some acreage. Can you back up just -- I think  
24 it's one more before that one.

25 I was looking at your third bullet, and



1 I think there's a math error there of an order of  
2 magnitude, if I'm correct. Because my  
3 recollection is that California has 100 million  
4 acres, and if that's correct, then that 3.5  
5 percent should be .35 percent. But I may be in  
6 error, so I wanted to ask that question.

7 MS. NELSON: No, you're correct. There  
8 is 99 million acres in California. So -- but I  
9 will double check. That may be a percentage of  
10 the urbanized part of the state.

11 MR. ABELSON: That would be fine. And  
12 if that's true that probably needs to be  
13 clarified.

14 MS. NELSON: Yes.

15 COMMISSIONER GEESMAN: David, before you  
16 leave, what legal effect in our siting cases has  
17 that generic finding from 2001, as it relates to  
18 significant and adverse impacts, had?

19 MR. ABELSON: I don't think,  
20 Commissioner, I'm actually in a position to know,  
21 because I'm not working on all of the cases where  
22 the issue has come up. I do know that in one of  
23 the siting cases that I am personally involved  
24 with, the staff has cited that as a small piece of  
25 information, suggesting that the impact in that

1 case is, in fact, significant. But it's just one  
2 of many pieces of information that are being  
3 provided to the Commission for their  
4 consideration.

5 COMMISSIONER GEESMAN: So it wasn't a  
6 finding entered into by the Commission with the  
7 intent that it would be binding on individual  
8 siting cases?

9 MR. ABELSON: The Environmental  
10 Performance Report, I don't think, has ever been  
11 viewed as a document specifically with a nexus to  
12 siting cases, per se. It was more of an  
13 informational document that the legislation  
14 requires us to put together, and then provide to  
15 the Legislature for generic action they might wish  
16 to take.

17 COMMISSIONER GEESMAN: Thank you.

18 CHAIRMAN KEESE: The complicating factor  
19 and one of the most difficult questions based in  
20 these cases is that there is an historical take.  
21 And attempting to decide what the historical take  
22 is in plants that have operated much of the time  
23 in the past, perhaps lesser over the years, and  
24 then at a much higher rate during the crisis. It  
25 becomes very difficult.

1           So I think that the comments that Mr.  
2   Abelson made would clearly apply to a new  
3   facility. But it's much more difficult to apply  
4   them to an old facility, and I use that word,  
5   historic take, very loosely. I'm not trying to  
6   establish anything.

7           COMMISSIONER BOYD: Well, another major  
8   problem in my mind is that that feature of a power  
9   plant is but one feature of a much larger  
10   ecosystem that usually is affected. It's not like  
11   sticking a straw in the ocean, particularly if  
12   you're dealing with an estuary.

13           And the difficulty that that finding  
14   provides to Commissioners is the need to  
15   understand the whole system, impacts on the  
16   system, and what changes in that system in  
17   question, might take place by variances or changes  
18   in the power plant operation, or technical  
19   equipment or what-have-you. And it makes for a  
20   very complicated issue.

21           And based on lots of scientific  
22   information, still leaves Commissioners with an  
23   almost subjective decision to be made on balancing  
24   various features and what's going to be best  
25   overall, perhaps, for the ecosystem in total.

1           So, it's a toughie.

2           MR. POWERS: Bill Powers, Border Power  
3           Plant Working Group. I just had a couple of  
4           fairly brief comments.

5           In your writeup you mentioned the trend  
6           in 316(b) regulations for new intakes is to  
7           establish national intake velocity requirements,  
8           as well as location-based requirements to minimize  
9           impingement and entrainment impacts.

10          And I just wanted to point out that  
11          EPA's minimum floor is working on intake velocity  
12          requirements. And there is a lawsuit and a whole  
13          effort underway to tighten that up.

14          But, they do address the issue of the  
15          alternatives. Dry cooling, for example. And I  
16          just wanted to read in the Federal Register  
17          publication of the draft phase two regulation,  
18          which covers repower projects like Morro Bay and  
19          Moss Landing.

20          They state: Although the EPA has  
21          rejected dry cooling technology as a national  
22          minimum requirement, EPA does not intend to  
23          restrict the use of dry cooling or to dispute that  
24          dry cooling may be the appropriate cooling  
25          technology for some facilities.

1           For example, facilities that are  
2   repowering and replacing the entire infrastructure  
3   of the facility may find that dry cooling is an  
4   acceptable technology in some cases. And  
5   specifically for California, a state may choose to  
6   use its own authorities to require dry cooling in  
7   areas where the state finds its (fishery resources  
8   need additional protection above the levels  
9   provided by these technology-based minimum  
10 standards.

11           I think it's important to point out that  
12 the velocity and other adjustments to these intake  
13 screens are minimum standards, and that the EPA  
14 could, in fact, be an ally of the California  
15 Energy Commission if you choose to make it an  
16 ally. Because they do say if you've got a  
17 resource that's important to you, dry cooling may  
18 be the way to go.

19           And the second point that I wanted to  
20 make, and this is Federal Register, April 9, 2002.  
21 The second point I wanted to make has to do with  
22 the, you do have a comment in here on the Salton  
23 Sea. And one second -- just wanted to find the  
24 citation.

25           Well, I recall what it is --

1 MS. NELSON: 7D? 8?

2 MR. POWERS: -- page that's on.

3 MS. NELSON: Page 78, that's what I --

4 MR. POWERS: Oh, here it is. Okay.

5 Page 78, on the bottom of the first paragraph,  
6 mentioned these permits were subsequently  
7 litigated, talking about the two power plants in  
8 Mexicali, for failing to consider transboundary  
9 impacts of associated actions.

10 That lawsuit was won in May of 2003.  
11 And that lawsuit, the plaintiff in that lawsuit is  
12 the group that I'm Chairman of, the Border Power  
13 Plant Working Group. And the reason I bring that  
14 up is that currently we're in remedy phase. We  
15 don't know what the remedy will be. We don't know  
16 if we will end up with dry cooling in Mexicali; we  
17 don't know what will happen. It's up to the judge  
18 right now.

19 But, the point I wanted to make, in the  
20 large paragraph in the center, you point out that  
21 the increase in pollutants produced by these two  
22 plants -- excuse me, the Salton Sea and the New  
23 River are plagued with salinity and other  
24 pollution problems, but the increase in pollutants  
25 produced by these two power plants is de minimis

1 to the Salton Sea.

2 But the remainder of that paragraph is  
3 an excerpt from the environmental assessment that  
4 was judged to be arbitrary and capricious by the  
5 federal judge. And so I would recommend that  
6 deleting it or heavily modifying it, because that  
7 was, in part, the basis for that arbitrary and  
8 capricious determination.

9 And the primary water issue at those two  
10 plants was direct discharge of cooling tower  
11 blowdown into a river that fed into a U.S.  
12 National Wildlife refuge. And just to point out  
13 that the Border Power Plant Working Group is not  
14 always an adversarial relationship with California  
15 institutions, we got expert declarations from  
16 Regional Board VII, Water Resources Division Chief  
17 from the Department of Health Services of  
18 California and from the Salton Sea Authority,  
19 which is a California government entity.

20 And I should point out that the water  
21 chief pulled two all-nighters to put his expert  
22 declarations out that, so I was very impressed,  
23 given he could be faced with minimum wage in a  
24 couple of months, to do that.

25 But the bottomline here is that we also,

1 the California Energy Commission was considering  
2 being an amicus brief in this, as well. That  
3 didn't happen.

4 But the point I wanted to make there is  
5 that you note that there are de minimis impacts,  
6 but what the regional board said, if those plants  
7 were located three miles north in California they  
8 would not be operational because they could not do  
9 that.

10 And I think that's important to point  
11 out, that the zero liquid discharge requirements  
12 generally required in California is one of the  
13 main issues in that case.

14 Thank you.

15 MS. DeBONO: Teresa DeBono with PG&E.  
16 And I'm sure you know when hydro stuff is up there  
17 I'm probably going to get up and comment.

18 Just very briefly, the issues discussed  
19 in this section related to hydro include a  
20 discussion that when these facilities were built  
21 there weren't the environmental standards in  
22 place. And it sounds like you can continue to  
23 operate without considering those standards today.

24 But not only do we have relicensing  
25 going on under FERC's jurisdiction under the



1 Federal Power Act, we also have to comply with the  
2 Endangered Species Act on an ongoing basis, the  
3 Fish and Game Code, all of these environmental  
4 statutes that we have out there in California.

5 In addition to, FERC has, in most of our  
6 licenses, the ability to reopen a license if Fish  
7 and Game or other agencies come to it with  
8 information about adverse impacts to fish and  
9 wildlife. We can reopen the licenses at any time.

10 So, I think what we would like to see is  
11 a balanced approach to the conclusions made about  
12 hydro and it not being operated in compliance with  
13 the standards of today. Because they are. And  
14 that's something we continue to work with.

15 An example is the Battle Creek project  
16 where we were PG&E, worked with other resource  
17 agencies and other parties to come to an agreement  
18 to protect salmon and steelhead in a critical  
19 watershed area.

20 So I think we can continue to do that  
21 and work with our resource agencies and other NGOs  
22 and other parties to do that.

23 The other area is in land use, and  
24 there's a conclusion made that because hydro uses  
25 or has the biggest footprint for land, that it's

1 the least efficient use of land for power. And I  
2 think one thing that's not mentioned is that the  
3 uses of the land that we have around hydro are  
4 providing multiple public beneficial uses,  
5 including recreation and fishing, water supply.

6 So the land use is not just for power.  
7 And I think that makes is one of the most  
8 efficient uses of the land, is because it provides  
9 a multiple of public use benefits. So I'm hoping  
10 that can be reflected in the next version of the  
11 report.

12 MS. NELSON: Actually it was already in  
13 the report that these reservoirs can be used for  
14 wildlife, fish, birds in that. That's why we  
15 presented both numbers. It depends, it's a  
16 subjective decision, when do you cut it off.  
17 Because if you want to count everything, then you  
18 have to count the reservoirs. If you just want to  
19 count land, footprints, or do you only  
20 subjectively want to pick things like windfarms,  
21 also, you can have lots of ground squirrels,  
22 rabbits, even deer underneath them.

23 So that's why sometimes we took the open  
24 space out from under the windfarms and sometimes  
25 we left it in.

1 MS. DeBONO: Okay, so what we're looking  
2 for is a balanced view of the environmental  
3 impacts, but also the environmental benefits and  
4 public benefits. So thank you for considering  
5 those comments.

6 COMMISSIONER GEESMAN: Has FERC reopened  
7 any of your licenses for environmental reasons.

8 MS. DeBONO: There's none currently  
9 open, but there have been in the past some issues  
10 back in the '80s, Potter Valley fish screens,  
11 Bucks Creek. Some issues back several decades  
12 ago. There aren't any current reopenings right  
13 now.

14 But the agencies and other groups have  
15 used that provision to reopen the license and  
16 readjust the operational considerations.

17 COMMISSIONER GEESMAN: Thank you.

18 MR. McKINNEY: If I could comment a bit  
19 on this section, since I had somewhat of a role in  
20 the hydro issues. In terms of the  
21 characterization of our state's hydro system not  
22 being in conformance with state code sections and  
23 law, the reference there, and perhaps it's not  
24 explicit enough, is to, I believe it's DFG Code  
25 3765, which is sufficient water below a dam for

1 sustainable fisheries populations. And also  
2 section 401 of the Clean Water Act which requires  
3 conformance with the beneficial use standards,  
4 both narrative and qualitative, as enunciated by  
5 the State Water Resources Control Board.

6 I think we'll see a little later in the  
7 presentation really just a very small fraction of  
8 the state's hydro system complies with the water  
9 board's requirements under section 401  
10 certification.

11 And I had one other question for  
12 Natasha. On this topic of reservoir inundation,  
13 and I know there's a lot of different ways to  
14 think about it and different perspectives, I've  
15 been curious as to how much more work it would  
16 take to understand, you say the linear miles of  
17 riparian habitat that were inundated. And also  
18 characterizing the linear miles of the aquatic,  
19 you know riverine habitat that were inundated  
20 through reservoir development.

21 I acknowledge that there are lots of  
22 wildlife uses and beneficial uses for reservoirs,  
23 and it's really -- I personally have grown up  
24 going to PG&E reservoirs as a kid on camping  
25 trips; it's a blast.

1           But in terms of the ecological changes  
2       that have happened, I've been curious as to  
3       whether that's something we could get at in the  
4       next report cycle, or whether there's just not the  
5       data and it's beyond our capacity.

6           MS. NELSON: It really seems like  
7       there's not that data. As you know from  
8       California trying to map their vegetation, there's  
9       been several attempts to map it. And it's always  
10      been a very gross scale. Nobody has the specific  
11      information or photographs or mapping at a  
12      consistent scale that can show these were riparian  
13      areas when Lewis and Clark came.

14           It's the same as how many fish were  
15      there before there was once-through cooling  
16      facilities. We can only guess the population  
17      sizes.

18           So, while there could be an estimate of  
19      linear miles, how many of those were riparian and  
20      how many of those were wetlands or wet meadows.  
21      That would be a subjective call in most cases.

22           There may be only one or two in  
23      facilities that were extensively mapped for a  
24      particular reason, a national park survey or a  
25      U.S. Forest Service survey. But I don't think we

1 can do it for the whole state. There may be a  
2 sidebar for 2005 for a particular, like I said,  
3 Forest Service region or national park.

4 MR. BELL: Pete Bell with California  
5 Hydropower Reform Coalition, again. Obviously  
6 this is one of the most important parts of this  
7 whole project to us. And we will provide in the  
8 next couple of days very specific comments. But I  
9 just wanted to make a couple of general comments  
10 here.

11 Staff has done a very good job in laying  
12 out the problems, the ecological damage of  
13 hydropower projects. Unfortunately, they seem to  
14 rely on FERC relicensing to correct a large number  
15 of these things, of these problems.

16 A FERC relicensing can correct problems,  
17 however some 30 percent of the hydro in California  
18 does not call under FERC regulation; it will not  
19 be relicensed. That's state-owned and federal-  
20 owned projects.

21 The other problem with relicensing is  
22 the workloads coming down the pipeline in the next  
23 15 years, the state and federal agencies, NGOs and  
24 even the utilities, themselves, are already  
25 overwhelmed. And it's going to get even worse.

1           So to count on FERC relicensing to  
2       really solve a lot of these problems, it's a great  
3       idea, but I wouldn't count on it. We're out there  
4       doing the best we can.

5           COMMISSIONER BOYD: What's the  
6       alternative?

7           MR. BELL: I'm not sure what the  
8       alternative is, but perhaps that might be part of  
9       this process, is to look and see what might be  
10      some alternative.

11          COMMISSIONER BOYD: Having spent quite a  
12      bit of time on the subject in past years, yes,  
13      there are reopener provisions, but it's a  
14      difficult thing to do. And as you heard, it  
15      hasn't been used much.

16          FERC relicensing has been identified,  
17      seized upon as one of the rare few opportunities  
18      to get at this. And, yes, the workload, you're  
19      right, the workload has been recognized by  
20      everybody as being significant.

21          There was a flurry of activity around  
22      the PG&E effort to divest itself of its hydro  
23      facilities, which did a good job of documenting a  
24      lot of the issues relevant to what hydro  
25      facilities have done over time.

1 I'm not faulting anybody. It's just  
2 that we didn't, you know, as Chairman Keese said  
3 awhile ago, science and technology advanced a long  
4 way. People didn't maliciously do what they did,  
5 it's just that we now know what the consequences  
6 of a lot of things were. And there's a lot of  
7 issues identified to be addressed in the process.  
8 And I'll commend PG&E for Battle Creek, but  
9 there's a lot of other issues that need to be  
10 dealt with.

11 You're right, it's just --

12 MR. BELL: I think you're also right.  
13 Probably what I can see coming out of this study,  
14 if we were to look into problems that the  
15 agencies, whether it's Fish and Game, whether it's  
16 Water Quality Control Board, the problems they're  
17 going to have over the next 10 to 15 years dealing  
18 with these relicensings and the manpower, people  
19 power it's going to take to do that, especially in  
20 light of present budget considerations, since you  
21 are preparing this report primarily for the  
22 Legislature, it's an opportunity to lay out  
23 clearly for the Legislature why it's important  
24 that these agencies have the necessary staff and  
25 expertise to deal with these situations coming up.



1 COMMISSIONER BOYD: Good point.

2 MR. BELL: The federal government is in  
3 the same position, but this is aimed at the State  
4 Legislature. That's where I see this could make a  
5 big difference.

6 I personally have worked with PG&E for  
7 many years. I was part of the Mokulmne settlement  
8 which is referenced in this study. These things  
9 can be done, but they are very time intensive;  
10 they're extremely labor intensive. The Mokulmne  
11 process, we had 97 full-day meetings in one year.  
12 And that doesn't count preparation time and all  
13 the other stuff. I'm just trying to give you an  
14 idea of what it takes to do these things.

15 And they're extremely labor intensive.  
16 And they're going to take personnel from all of  
17 the agencies in order to reach consensus.

18 Another point I'd like to bring up is,  
19 you know, there's been a lot of talk here about  
20 reservoirs, and the reservoirs have value other  
21 than the actual production of power and so forth.

22 I can't tell you any statistics, but I  
23 can tell you from where I live, I live in Amador  
24 County on the Mokulmne River. And I can tell you  
25 the people that use the reservoirs for recreation

1 in our county.

2 They show up in their RV with their  
3 groceries that they bought at home and their  
4 fishing tackle that they bought at home, and they  
5 spend \$2 a night for a campsite and then they go  
6 home.

7 The fishermen that fish in the streams  
8 or the boaters that boat the whitewater streams,  
9 they come to our county and they stay at the  
10 motels and they eat in the restaurants and they  
11 spend a lot of money in the county.

12 And I know I'm getting over into the  
13 socioeconomic part that's coming later, but I'm  
14 going to have to leave after lunch, so I was just  
15 wanting to bring that in. These are important  
16 things to consider. I would like to see some of  
17 that in there.

18 Thank you.

19 MR. KENNEDY: Do we have any other  
20 questions on the biology section?

21 I guess that we're done for the morning.  
22 I want to thank everyone for your stamina and your  
23 patience through what has been a fairly long  
24 morning.

25 Let's break for lunch and reconvene at

1       about 1:30.   Thank you.

2               (Whereupon, at 12:30 p.m., the workshop  
3       was adjourned, to reconvene at 1:30  
4       p.m., this same day.)

5                       --o0o--

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## 1 AFTERNOON SESSION

2 1:38 p.m.

3 MR. KENNEDY: I'd like to welcome  
4 everybody back to the afternoon session before the  
5 Environmental Performance Report workshop. We  
6 have slightly rearranged the order for the  
7 afternoon. We're going to start with the land use  
8 presentation and then move on to water and then on  
9 to the socioeconomics and environmental justice  
10 discussion.

11 So without further ado, Eileen Allen on  
12 land use.

13 MS. ALLEN: Good afternoon; thanks for  
14 returning from lunch so promptly. The handout  
15 that you have is going to be slightly different  
16 than what's on the screen. The only differences  
17 are the slides 6 and 7 have been rearranged. And  
18 what you'll see on the screen as slide 7 has some  
19 issue-oriented questions in addition to what you  
20 have in your handout.

21 In addition to the points that I'll be  
22 making as far as our findings, I put the three  
23 colored handouts out on the front table that  
24 discuss some basic land use concepts.

25 I discovered when I was working on the

1 analysis with my land use team that there was some  
2 confusion about what was meant by land use. Also  
3 there were some questions about who does what as  
4 far as what kind of energy facilities in  
5 California.

6 For example, there's always some  
7 ambiguity about who's responsible for permitting  
8 pipelines. And similarly, we may be facing that  
9 with LNG facilities as far as who does what.

10 The final handout is an explanation of  
11 an urban planning tool called PLACES. And Nancy  
12 Hanson will be on hand in a few minutes to discuss  
13 that in more detail.

14 This is an acreage profile for  
15 California's lands. As Dave Abelson said, we are  
16 dealing with 100,000 acres of land all together,  
17 approximately. Of that a huge chunk is federally  
18 owned or administered land. Ag land is still a  
19 significant piece. Water area, including  
20 reservoirs, are significant. And then urban and  
21 built-up land is increasing rapidly as  
22 California's population grows.

23 Electric generation facilities current  
24 occupy close to 13,000 acres. This slide is drawn  
25 from page 71 of the draft report. The footnote

1 indicates that that figure of almost 13,000 acres  
2 doesn't include the actual land covered by water  
3 and reservoirs. The land that's associated with  
4 windfarms that isn't occupied by the turbine  
5 facility, itself. And similarly, the land in  
6 landfills is not included in that acreage figure.

7 The transmission facilities, that  
8 acreage figure is based on approximately 31,000  
9 linear miles of line, and assumes a 200-foot  
10 right-of-way.

11 This chart breaks down the types of  
12 facilities; the number of units in 1996 versus the  
13 number of units that we had added between 1996 and  
14 2002; the approximate acreage occupied by the  
15 aggregate units for each category.

16 As you can see, from 1996 to '02, there  
17 wasn't an overall large number of acres that were  
18 taken up by new energy facilities. What we're  
19 more concerned with is the energy facility piece  
20 of the overall urban growth and development trend  
21 in California.

22 Of the cases that we had between 1996  
23 and 2002, approximately 40 percent of them  
24 required some kind of local action, such as a  
25 general plan amendment or a zoning change, or some

1 kind of other local change such that the project  
2 was not entirely consistent with how local  
3 planners had set it up.

4 This is consistent with our observation  
5 that the local regional planning process, as  
6 detailed as it is, and most local planning  
7 processes as far as general plan updates do  
8 attempt to accommodate a comprehensive range of  
9 uses. It's pretty seldom that large energy  
10 facilities like large transmission lines and large  
11 electric power plants are factored into a long-  
12 range planning process for development.

13 This seems particularly true in the  
14 rapidly growing urban areas. We have found that  
15 energy facility development and repowering is  
16 often occurring very close to sensitive resources  
17 such as existing schools, schools that are  
18 planned, new home development and parks that are  
19 planned.

20 This was true in California's three  
21 counties that have the very highest growth rate;  
22 those are Riverside County, particularly in the  
23 western sector of the county, Placer County,  
24 including the Roseville area, and San Joaquin  
25 County.

1           We had issues associated with planned or  
2           existing schools, new home developments planned.  
3           And in San Joaquin County, planned churches that  
4           the community perceived were close to where the  
5           energy facilities were proposed.

6           Things that we plan to do as a follow up  
7           to this EPR are work with the Coastal Commission  
8           and BCDC to discuss planning activities that would  
9           be productive related to future repowering of  
10          coastal power plants.

11          Work more with local and regional  
12          governments to integrate consideration of energy  
13          facilities such as power plants and large  
14          transmission lines in the general plan process.  
15          Using tools such as PLACES, which Nancy will  
16          discuss. And then collect a broader array of land  
17          use data for energy facilities.

18          There are a lot of energy facilities  
19          that are outside of our jurisdiction, so we have  
20          quite a bit of data on the facilities that are at  
21          least 50 megawatts that are thermal, but really  
22          not much for facilities that are outside our  
23          jurisdiction. Or facilities that are not directly  
24          generation oriented, like the refinery sector.

25          This is what I meant, this slide



1 corresponds somewhat to your page 6 where page 6  
2 in your handout starts with local examples, I've  
3 added in the issue questions. We'd like more  
4 input on how we can work with local governments  
5 which have control over land use decisions to  
6 effectively plan for newer repowered energy  
7 facilities.

8 And then what's the best role for the  
9 Energy Commission in addressing energy  
10 infrastructure needs, given California's rapid  
11 urban growth. Especially in some of those areas  
12 that I mentioned like those top three counties.

13 Local examples of community land use  
14 issues occurred in the City and County of San  
15 Francisco. With the United Golden Gate Power  
16 Plant project there was a site control issue where  
17 the power plant went through the licensing process  
18 and it seemed as if the issues were effectively  
19 mitigated. The City and County of San Francisco  
20 never produced a signed lease for the site at the  
21 San Francisco Airport.

22 The Potrero project is ongoing. There  
23 are a variety of issues that are associated with  
24 that. There's a tremendous amount of community  
25 concern that perhaps an expanded power plant at

1 the Potrero site is not in the best interests of  
2 the community. Yet there still seems to be an  
3 identified need for more energy, and there are a  
4 lot of discussions about alternatives that may or  
5 may not be effective in meeting the overall needs  
6 for San Francisco.

7 The City of South Gate, with the Nueva  
8 Azalea project, had a local resolution and  
9 referendum opposing the project. Initially the  
10 city council in South Gate voted to oppose that  
11 project. And then that went to the voters who  
12 voted to oppose it. And the Nueva Azalea project  
13 proponent deferred to the vote of the South Gate  
14 population and withdrew that project.

15 So there are two examples of power plant  
16 projects that have created intense community  
17 controversy. Community controversy is not new to  
18 the Energy Commission. It can be a delaying  
19 process as far as licensing, and can create some  
20 significant issues to be resolved.

21 So that concludes my formal  
22 presentation, and I'm available to answer  
23 questions and discuss these items.

24 DR. TOOKER: Eileen, what are you going  
25 to be doing with the Coastal Commission and BCDC

1       regarding repowering? What kind of issues are you  
2       going to be talking about? What kind of  
3       strategies are you going to be considering  
4       pursuing?

5               MS. ALLEN: Well, as the Coastal  
6       Commission works with local government staffs,  
7       which are the Coastal Commission's delegate for  
8       the LCP process called the local coastal planning  
9       process, we'd like to talk with the Coastal  
10      Commission Staff about what would be the best way  
11      for us to begin working with them and the local  
12      staff.

13             All this is Energy Commission Staff  
14      resources permitting, too. I'm not sure how much  
15      time we'll have to be able to devote to that  
16      during the coming fiscal year. But it seems like  
17      something that needs to happen in terms of how  
18      they're an array of plants along the California  
19      coast. And there's interest from a number of  
20      sectors in changes to those plants.

21             Ideally we'd be able to talk with a  
22      diverse section of the community about their long-  
23      term vision.

24             DR. TOOKER: Would you foresee the  
25      results of that then showing up perhaps in the

1 next cycle of the Environmental Performance Report  
2 in the land use section?

3 MS. ALLEN: Certainly in terms of our  
4 starting the discussion process with the two state  
5 agencies.

6 DR. TOOKER: Thank you.

7 CHAIRMAN KEESE: How many coastal power  
8 plants do we have?

9 MS. ALLEN: At least 20. I'm going to  
10 defer to Jim on that. I think it's between 20 and  
11 26.

12 CHAIRMAN KEESE: All right.

13 MR. McKINNEY: I was going to say, I  
14 think it's 24 including the nuclears and Humboldt.

15 CHAIRMAN KEESE: Good, thank you.

16 DR. TOOKER: I just wanted to make one  
17 other comment in response to your request. I  
18 think in terms of getting local governments more  
19 involved, what we need to do is provide them with  
20 more information about the needs of the state for  
21 electricity; the transmission grid, the problems  
22 it has; the locational issues. Those things that  
23 they can then relate to that may affect their  
24 jurisdictions and get them to recognize that they  
25 need to be talking with the utilities and with us

1 and others in their planning process.

2 But I think in the absence of giving  
3 them specific information so they can better  
4 understand the nature of the generation and  
5 transmission system and pipeline system, you're  
6 not going to get very much response.

7 But starting with good descriptive  
8 information I think would be helpful.

9 MS. ALLEN: Thank you. Given sufficient  
10 resources it will also be helpful for us to work  
11 with the statewide groups like the League of  
12 California Cities, the County Supervisors  
13 Association. So we hope to do that.

14 MS. DeBONO: I wanted to just suggest  
15 for this topic area on land use issues that one  
16 document that I've used extensively over the years  
17 is the document the CEC prepared, the Energy Aware  
18 Planning Guide. And it had great examples of how  
19 utilities and county governments and city  
20 governments could work together in the land use  
21 planning area in trying to build into its planning  
22 the energy infrastructure.

23 And this is the most critical area if  
24 you're trying to finally site generation. I know  
25 we've been trying to shut down our Hunters' Point

1 Power Plant, but we do need generation in San  
2 Francisco. The ISO has to allow us to shut it  
3 down. And it needs generation or transmission  
4 projects to come online quickly in order to make  
5 that happen. So we're kind of wondering what  
6 we're going to do in the San Francisco area.

7 But I do want to encourage you to  
8 reference that Energy Aware Planning Guide that  
9 the CEC produced a couple years ago. It's a great  
10 tool for people to use for this issue.

11 MS. ALLEN: Thank you for that reminder.  
12 It is an excellent tool. Nancy Hanson was the  
13 major actor associated with Energy Aware, so, you  
14 know, thanks for the reminder.

15 Unless there are further questions,  
16 Nancy's here to talk about the PLACES urban and  
17 regional planning tool. Are there further  
18 questions from the Commissioners? Jim?

19 MR. MCKINNEY: Eileen, I wanted to kind  
20 of continue asking questions about data  
21 availability because that's been a real challenge  
22 for us this report cycle.

23 With the land use work that you did, did  
24 you find that you had access to the data that you  
25 needed to do your chapter? Or was that a real

1 issue?

2 MS. ALLEN: It's certainly not uniform.  
3 I'd say it was more erratic than consistent and  
4 easy.

5 I mentioned that we only have data  
6 related to the facilities that we deal with a lot  
7 or have jurisdiction over. As California has an  
8 array of local jurisdictions it's very challenging  
9 for us to be able to get land use data related to  
10 California's 400 cities and 58 counties.

11 Thank you.

12 MS. HANSON: I'm Nancy Hanson with the  
13 Energy Commission. I just wanted to make a  
14 comment regarding data availability. And I'm  
15 hearing that there's a need for statewide  
16 information on generation, where generation is  
17 needed and transmission lines.

18 That's very -- it's information we have  
19 internally; it's very technical and we project it  
20 out over the future. But, within the State of  
21 California regional governments are sitting with  
22 loads and loads of information in their regional  
23 databases, and there's lots of planning going on  
24 every day, transportation and land use planning  
25 that the NPOs are doing.

1           And to me, when I see that in the PLACES  
2       work I'm doing, it's a terrific template. If we  
3       took statewide information and broke it down  
4       according to regional planning needs, then they  
5       would have a natural whole in a compatibility to  
6       be done with the regional transportation and land  
7       use planning that's already going.

8           And that transportation and land use  
9       planning is based on regional growth analyses, and  
10      so they know where the houses are going to be and  
11      when, and where the factories and the commercial  
12      developments are going to be, which are the  
13      energy, electricity and natural gas demand  
14      centers. So there's a compatibility there. It's  
15      just a data structure comment; I think that would  
16      work well.

17          My job here is to give a five-minute  
18      sort of overview of what the PLACES program is and  
19      where it is in terms of being used as an energy  
20      planning tool.

21          First of all, PLACES is an acronym; it  
22      stands for planning for community energy  
23      environmental and economic sustainability, and  
24      it's sort of a core tool being used all over the  
25      state in different areas for smart growth



1 planning, and primarily at the regional level.

2 Right now it's primarily a land use and  
3 transportation regional and urban planning tool.

4 Very briefly in terms of background,  
5 PLACES employs a five-step planning method, very  
6 similar to what regional and local governments are  
7 doing all over anyway.

8 You document existing conditions, you  
9 quantify what that means in terms of what's on the  
10 ground in your city or your county right now, and  
11 what will be on the ground in 20 or 50 years if  
12 you don't do anything. And that's called business  
13 as usual. It gives you a baseline.

14 And then you use the PLACES tool to  
15 develop alternatives; quantify them; compare them;  
16 get smart about what your choices are; and use  
17 that information that's developed to create a  
18 preferred alternative, which is what we hope would  
19 be adopted in policy by the city, the county, the  
20 regional government. And then you have the tool  
21 in place to implement and track how well you're  
22 doing.

23 PLACES is built on three components. It  
24 has in its center very high quality planning  
25 information built from research that's done by air

1 districts, transportation studies, land use  
2 analyses. We tried to take the best that was  
3 available nationally and put it into the PLACES  
4 method.

5 It has a very very strong public and  
6 agency involvement routine. We've developed the  
7 tools very -- with the core principle of educating  
8 the citizens and planners so that they can make  
9 informed choices.

10 And the PLACES program is based on a GIS  
11 analysis tool so it provides analytical  
12 comparisons, quantitative comparisons of  
13 alternatives and the components of those  
14 alternatives, which we call indicators.

15 In one slide that I'm trying to show  
16 what the PLACES method does, the first column is  
17 that business as usual alternative. What's on the  
18 ground now, at 20 years out, and you measure it;  
19 you map it; you understand it.

20 And then you go through the public  
21 process and create a set of alternatives. One  
22 alternative we always hope will be one that  
23 employs all the smart growth principles, which  
24 include all forms of energy efficiency, and it  
25 could include renewable generation, distributed

1 generation.

2 And there's a lot of learning that goes  
3 on in that process. So that the stakeholders are  
4 starting to see how their issue relates to other  
5 issues, and they buy into the whole planning  
6 process. I've seen that over and over again.

7 And then the preferred alternative, the  
8 goal is to net out what they environmentally and  
9 economically and socially preferred plan. And  
10 that does seem to happen.

11 This is an example of -- a highly  
12 simplified example of one of the graphics that  
13 could be used in the PLACES process. I put this  
14 in here because I think it helps people understand  
15 how this works.

16 The little maps which are, I understand,  
17 hard to read, are a variety of land use  
18 alternatives. This is for one transit area. And  
19 behind each of those parcels is lots and lots of  
20 data loaded into the computer. The community and  
21 the professional planners develop several  
22 alternatives.

23 Everybody looks at them, sees what they  
24 like and don't like, look how each alternative  
25 compares on a variety of indicators like how much

1 traffic is generated, air pollution, how much  
2 housing is provided, how many jobs are on that  
3 site, how many riders are on the transit system,  
4 all these sorts of parameters.

5 And those indicators on the bottom, you  
6 can see you can imagine a set of alternatives and  
7 you get a read-out. And people can look at that.  
8 And they're starting to think quantitatively and  
9 emotionally and creatively, and that's how this  
10 engages the planners and the citizens in the  
11 planning process.

12 These are a few of the indicators that  
13 are used in the PLACES program, things like  
14 employment and housing data, affordable housing,  
15 how much is onsite, how much is affordable for the  
16 jobs in that location, so are you really reducing  
17 transportation demand.

18 Mix of land uses, which is important for  
19 a whole variety of environmental and social  
20 measurements. Vehicle miles traveled, commute  
21 time, these kinds of parameters fit into  
22 transportation planning.

23 Lots of economic information that  
24 developers and investors can use to see if this is  
25 a plan that they want to invest in. And use that

1 to do what we call an economic reality check which  
2 developers really like, because they can see a  
3 plan, they can start to see where they can make a  
4 profit based on their particular business plan.

5 We measure various components of air  
6 pollution, amounts of urbanized land, open space,  
7 ag land, which is really important regionally  
8 because you want to look -- in a regional study  
9 you really want to see how you're netting out in  
10 terms of bringing your growth in and protecting  
11 open space.

12 In the future, in the very near future,  
13 we have this process funded and underway. The  
14 PLACES tool will measure electricity and natural  
15 gas for each land use alternative and provide that  
16 information in the public meeting so that when a  
17 community is planning their neighborhood or a  
18 region is planning a six-county area, for example  
19 in Sacramento, the people at the planning table,  
20 citizens, the professional planners will be able  
21 to see how this plan affects energy demand.

22 And as far as I know that has never ever  
23 been done before. That's a brand new thing. And  
24 I expect that that will, once and for all, put a  
25 planning table for the energy thinking, the

1       beginning of this process, to make people more  
2       aware of how their choices are affecting energy  
3       demand.

4               And then from that they can start  
5       thinking about, well, are we going to need more  
6       generation; what are the opportunities; do we want  
7       here or there, you know, big power plant, small  
8       power plant; do we want to be more efficient. And  
9       they start asking those questions, and asking for  
10      that information to be presented to them before  
11      they make decisions.

12             So that's the first step. That's where  
13      we are now.

14             In the near future we hope to be able to  
15      add to the PLACES method an analytical capability  
16      to take the electricity and natural gas demand  
17      information and match it up with, if you imagine a  
18      database of energy technologies, so that it will  
19      look at baseloaded peak demand for various land  
20      use plans. And start to select energy options  
21      that match that land use plan.

22             That's our next step. We don't have the  
23      funding for that, but that could happen relatively  
24      quickly. We've done the first level of  
25      programming for that. So we do know how to get

1       started; we just need to get it programmed into  
2       the tool.

3               And in the future Jim had mentioned in  
4       his presentation earlier that one of the goals was  
5       to get toward measuring environmental quality  
6       effects and environmental efficiency ultimately.  
7       And there is a hopefulness that a tool like this  
8       could contribute to meeting some of those goals.  
9       We would need to do some more research and  
10      development, but it's certainly, I believe,  
11      attainable.

12             And in that regard we have, last year,  
13      finished a grant that the U.S. Department of  
14      Energy funded, and that was to start to do the --  
15      that's where we did the programming for the  
16      electricity and natural gas demand by land use  
17      type.

18             We hired what I believe was an excellent  
19      consultant team. And they put their smarts into  
20      how to take everything they know and put it into  
21      the kinds of decisions that cities and counties  
22      make every day. And we did it in a GIS format.

23             And the first part of this diagram, we  
24      are this far into the process right here. We are  
25      able to take up a land use plan, a development

1 plan, and measure the electricity and natural gas  
2 demand generated by a whole set of scenarios for  
3 one area, and create an energy use profile that's  
4 built on what kinds, where the houses are going  
5 and how many, and where the jobs are and how, and  
6 commercial development, that sort of thing.

7 So we're here, and we could be doing  
8 this. We have the programming done, but it's not  
9 added to our internet tool yet. But I think  
10 that's an interesting next step to be thought  
11 about, and some of the things I've been hearing  
12 talked about here today. And how that's done  
13 could be adjusted to meet some of the needs of the  
14 study that Jim and Kevin are managing.

15 That's it for my presentation. Are  
16 there questions?

17 MS. BAKKER: I didn't notice this on  
18 your previous --

19 COMMISSIONER BOYD: Susan, who are you?

20 MS. BAKKER: I'm sorry, --

21 (Laughter.)

22 MS. BAKKER: -- Susan Bakker, I work for  
23 Commissioner Boyd. I didn't notice about the  
24 slide you showed that talked about VMT whether you  
25 discussed gallons of gasoline or diesel.



1           And then the next slide you discussed  
2           electricity and natural gas, so I was concerned  
3           about whether you were also measuring energy use  
4           for transportation.

5           MS. HANSON: Right, because this forum  
6           is focused on power plants I left that out. We  
7           developed actually a couple years ago the capacity  
8           to do gasoline consumption because the PLACES tool  
9           has pretty advanced transportation modeling. And  
10          in fact, in the last six months has been vastly  
11          upgraded.

12          There are -- I should say, regional  
13          governments do very complicated transportation  
14          analysis they call four-step models. They take a  
15          long time to do. And local governments do land  
16          use planning, and they do that absent of these  
17          complicated transportation models until they  
18          started doing things like EIRs on general plans.

19          What PLACES has done is embedded inside  
20          the model something we call 4Ds which is a very  
21          good but smaller, easier to run, transportation  
22          analysis tool.

23          So in the last six months the PLACES  
24          program has gotten much better at being more  
25          accurate about things like gasoline consumption by

1 land use alternative. Because the transportation  
2 model, the trip generation data and all of that is  
3 much better.

4 COMMISSIONER GEESMAN: I think we would  
5 be well advised to put as many of these tools in  
6 the hands of local and regional governments as we  
7 can. For better or for worse, state government  
8 decisions tend to drive the evolution of our  
9 energy system. And I think anybody that doesn't  
10 believe that should look backwards at the last  
11 three or four years of power plant siting.

12 Once the state became convinced that  
13 there was a challenge to be met here, a very large  
14 number of power plant sites were found all around  
15 California. Local government concerns were taken  
16 into consideration, but I think ultimately the  
17 record of power plant approvals would suggest that  
18 statewide concerns were paramount.

19 And I think that that's likely to  
20 replicate itself in the transportation fuels  
21 sector with respect to marine infrastructure,  
22 gasoline storage, refinery expansions, as well.  
23 And that may not set well with the local and  
24 regional governments.

25 And unless we provide them with tools to

1 get a better local handle on what's coming, I  
2 think we'll encounter a great deal of friction  
3 going forward.

4 In the electrical sector I would suspect  
5 that our transmission needs will probably bring  
6 that to the forefront pretty quickly. But our  
7 renewable energy development plans are likely to  
8 in certain parts of the state.

9 So, at least from my perspective, the  
10 more emphasis we can put on bringing effective  
11 planning tools to the hands of local and regional  
12 governments, probably the happier the situation  
13 we'll have over the next five or ten years.

14 MS. HANSON: In that regard the  
15 Sacramento Council of Governments, our regional  
16 government, is a six-county government, and  
17 they're doing something called the Blueprint  
18 Project, which has places at its core as an  
19 analytical tool. And it's a very high quality  
20 regional growth, transportation, air quality, land  
21 use analysis.

22 And we will make the electricity and  
23 natural gas tool available to them as soon as the  
24 programming is done. But, in addition to that, it  
25 may make sense to have some Energy Commission

1 creative and watchful eyes go look at what they're  
2 doing and see where what we know how to do might  
3 be beneficial to get an idea for how to construct  
4 an energy planning tool that would be deployed at  
5 a regional level. And then useful by the cities  
6 and counties in that region.

7 It would take efficiency people -- it  
8 would be an idea. Because it's right now ongoing,  
9 they're right in the middle of it.

10 MS. NELSON: Am I correct that most of  
11 the land use planning would make a broad category  
12 called industrial, and not specifically call out  
13 this particular, we're expecting 500 acres of  
14 energy development.

15 MS. HANSON: That's where if the Energy  
16 Commission provided, you know, create a statewide  
17 database and then broke it down by regions in  
18 terms of how we think the generation and  
19 transmission should be deployed, they would be  
20 able to fine tune their land use categories to  
21 plan ahead for that.

22 But right now, as far as I know they  
23 really don't know much.

24 MS. NELSON: Right, and --

25 MS. HANSON: And they do go into

1 industrial, you're right. That's the zoning.

2 MS. NELSON: What happens with U.S. Fish  
3 and Wildlife Service is when they're trying to  
4 permit things or they have a habitat conservation  
5 plan, they may have included industrial in their  
6 habitat conservation plan, but it's uncertain  
7 whether a natural gas infrastructure or  
8 transmission line infrastructure falls into  
9 industrial, so that HCP may have accounted for  
10 5000 acres of industrial loss, but they're not  
11 sure they want to count those.

12 So, I think it is important that we do  
13 get involved in how they make that very specific  
14 category that we're expecting so much land to be  
15 developed in energy development. And that will  
16 help them with either their existing or their  
17 future U.S. Fish and Wildlife Service permitting,  
18 as much of the permitting is going to a county or  
19 regional basis.

20 MS. HANSON: Um-hum.

21 DR. TOOKER: I thought it was worth  
22 mentioning that not only is SACOG using the PLACES  
23 model very successfully, but as we sit here today  
24 there's a tear-down of an existing facility in the  
25 65th Street light rail station area that was

1 planned using PLACES. That they are clearing the  
2 lot to be able to put up a mixed-use development  
3 that fits with the plan that was developed using  
4 the PLACES approach.

5 And so we're starting to see here in  
6 Sacramento real things happening on the ground  
7 with making choices based on this kind of  
8 information. So I think it has a real future.

9 MS. HANSON: I think some of that  
10 development may not have happened had the City not  
11 had the economic development data that came from  
12 PLACES to barter with the developers and get them  
13 to, you know, show them that this can make a  
14 profit. We want mixed use, yeah. That's today?  
15 Did they tear down that big barn?

16 DR. TOOKER: It started a month ago.

17 MS. HANSON: That big wooden barn?

18 DR. TOOKER: (inaudible).

19 MS. HANSON: Sorry.

20 COMMISSIONER BOYD: Have you noticed, as  
21 a result, because I know you've had this tool for  
22 quite some time, and have been developing it and  
23 trying to make it known. I learned of it three or  
24 four years ago when I was across the street.

25 Has the electricity crisis, which is

1 turning into an energy crisis heightened  
2 decisionmakers' interest in a) thinking about  
3 energy facilities in land use planning; and b)  
4 made this tool a little more known or popular?

5 MS. HANSON: It has heightened their  
6 awareness. I know Marin County, for example,  
7 called me today and is wanting to do a distributed  
8 generation component to their general plan. And  
9 they're asking what policies exist and how do we  
10 do this, and you know, what's already been done.

11 It hasn't heightened it; it has  
12 heightened the interest in PLACES. Unfortunately  
13 we didn't, until recently, have the DOE funding  
14 that paid to get the electricity and natural gas  
15 demand function programmed into PLACES. And we  
16 still don't have the distributed generation in  
17 there.

18 So people are asking about it, you know,  
19 and they're only getting the gasoline so far.

20 COMMISSIONER BOYD: And I presume our  
21 current fiscal crisis isn't going to help matters.  
22 Maybe I shouldn't get going on one of my pet  
23 peeves in life, which has been land use planning  
24 or the lack thereof. I mean it's just so critical  
25 to so much, and there's just so many factors in

1 California's structure, everything from Prop 13 to  
2 competition between local decisionmakers and their  
3 resident COG, if there is one, et cetera, et  
4 cetera.

5 It's a gravely needed thing in my mind  
6 that has been neglected or abused for a long time.  
7 And I don't have a lot of faith for the future,  
8 but perhaps we can focus more attention on the  
9 need, as a result of the energy crisis, the  
10 heightened knowledge and interest in energy, and  
11 pushing the issue a little bit more.

12 MS. HANSON: I would invite you to  
13 witness what they're doing with the Blueprint  
14 Project. You might feel a little better. They've  
15 done things like got fed highway to free up how  
16 that money's used so that they can do it, use it  
17 to give to local governments to actually exchange  
18 policies, you know. So they're sort of funding  
19 the mechanics of what policies need to be adopted  
20 to change sort of the status quo of land use  
21 planning.

22 And as more people become more informed  
23 by participating in like public meetings and  
24 talking to people with different points of view  
25 across the table and measuring and quantifying



1 things, it seems, I believe that does make a  
2 difference in terms of people supporting their  
3 local planning process and elected officials  
4 having less weak knees to do things that sometimes  
5 would otherwise be less popular.

6 COMMISSIONER BOYD: Do you feel that the  
7 various state agencies have been able to let each  
8 other know what kinds of tools and data they have?  
9 Eileen's earlier comments about needing to get at  
10 data.

11 And just too many years I've been around  
12 and known that database after database, I just  
13 wonder if the community of state government has  
14 been able to make itself aware of all the data  
15 that other folks have.

16 And one always hoped that OP&R would  
17 become a repository, essential clearinghouse for  
18 that data. I don't know that they've ever become  
19 that.

20 MS. HANSON: I've seen a couple things  
21 where they sort of audited the state agencies to  
22 what data you have, and it's GIS data; you know,  
23 and how is it being used. And there's a sort of a  
24 small report put out, maybe they've done something  
25 since that that I have not seen.

1           And OPR is hosting a program they call  
2     the EGPR. And gosh, I don't even remember what  
3     that -- environmental goals and policy report,  
4     where they've been bringing all the state agencies  
5     together and asking them what information do they  
6     have, what issues do they have related to growth  
7     in the state. And that, you know, often brings up  
8     what data you have in hand.

9           But, it -- you know, that report is due  
10    at the end of the year. I don't know that that  
11    would totally satisfy.

12           COMMISSIONER BOYD: To what extent has  
13    the Resources Agency's legacy project ever made --  
14    availed itself of PLACES or tried to consider  
15    energy facility planning in what it's trying to do  
16    with just resource issues?

17           MS. HANSON: I am not very well informed  
18    on the legacy project. It's one of those things I  
19    probably should be. Jim, do you --

20           COMMISSIONER BOYD: I was afraid you'd  
21    say that.

22           MS. HANSON: Yeah, I know. We should  
23    cross paths more. I think I will do that in the  
24    very near future and let you know.

25           COMMISSIONER BOYD: Be glad to help.

1           MR. MCKINNEY: Kind of a comment and a  
2 question, Nancy. I always enjoy hearing your  
3 presentations because you have such a good big  
4 picture, holistic approach to these things.

5           And early on in our IEPR process we  
6 kicked around terms like, you know,  
7 sustainability, about what a sustainable energy  
8 system looked like. What would an environmentally  
9 efficient energy system look like. How would we  
10 define that. What indicators would we use.

11          And we got so busy counting, you know,  
12 the tons of NOx and acres of land and everything  
13 that we've kind of forgotten about that initial  
14 set of discussions that we had.

15          But, Nancy, I'm just reminded about  
16 that. And since we do sit next to each other,  
17 perhaps you and I can talk more about how to, you  
18 know, use some of the tools from your process to  
19 help inform our work.

20          MS. HANSON: Yeah, when you were making  
21 your presentation I was sitting there taking notes  
22 and thinking, gosh, you know, this sounds like a  
23 research grant we could write.

24          (Laughter.)

25          MS. HANSON: Or something like that.

1 It's out there; it's do-able. You just need to  
2 get the right people focused on the issue and it  
3 would be done. And then you'd deploy it and  
4 incrementally improve it.

5 MR. KENNEDY: Unless there are any other  
6 questions on land use or PLACES, I think we'll go  
7 ahead and move on to the discussion of water.  
8 Dick Anderson is going to be giving that  
9 presentation.

10 MR. ANDERSON: Hi, my name is Dick  
11 Anderson. Can you hear me?

12 I'm going to talk about water and  
13 summarize some of the issues and the findings on  
14 the EPR.

15 Clean water is an increasingly critical  
16 resource in California. And how many of you drank  
17 bottled water today? We're starting to take that  
18 for granted, but that's the point we're at in  
19 California with good, clean fresh water. And it's  
20 only going to get worse.

21 But one quote from Mark Twain; you  
22 probably are aware of it, heard it too many times.  
23 But he, when he was visiting or living in  
24 California said, "whiskey is for drinking, water's  
25 for fighting over."

1           We're kind of headed in that direction  
2 again. There is a potential for energy facilities  
3 to affect fresh water supply and fresh water  
4 quality, and that's mostly what we'll talk about  
5 today.

6           We mentioned once-through cooling and  
7 some of the issues of marine bay and estuarine  
8 ecosystems.

9           Summary of findings are competition for  
10 fresh water is increasing. You read about it in  
11 the paper almost daily. Some years contractual  
12 obligations, this is the federal and state water  
13 project to meet water needs, are not met. And  
14 we've got a discussion about future projections  
15 later that will come back to that.

16           Power plant use significantly impacts  
17 local water efforts, local water supplies or local  
18 water quality. Total use in the state, however,  
19 is less than 1 percent. So the water use for  
20 electricity, although small statewide, can be very  
21 significant.

22           And since 1996 siting of new power  
23 plants in areas with limited fresh water supplies  
24 has increased. And that's really a simple concept  
25 because they're not siting power plants, at least

1 new power plants, along the coast, they're all  
2 inland. And that will probably be the trend since  
3 the Coastal Act. There won't be any more new  
4 power plants on the coast other than the existing  
5 facilities.

6 Using degraded surface and groundwater  
7 is a viable option. Degraded, when we talk about  
8 degraded surface and ground water we include  
9 things like reclaimed water or recycled water,  
10 which is something we're very -- that we prefer  
11 right now for power plant use.

12 Power generation water use data is a  
13 theme that's been mentioned many times. The data  
14 is not there. The four projects that the Energy  
15 Commission worked on, there is no data. There's  
16 hundreds of power plants, most of them are quite  
17 small, that we have very little information about  
18 how much water they use. We're working on that.  
19 Hopefully in a year or two we will have improved  
20 our database to a point where we can talk with  
21 more confidence about the historical water use and  
22 what the trends really are, looking back 50 years.

23 Water quality area, wastewater discharge  
24 impacts are being reduced by using ZLD, which is  
25 zero liquid discharge. There are a lot of

1 reasons, but one of them is tightening  
2 requirements on discharge constituents by various  
3 laws, federal and state laws, making it very  
4 difficult for power plants that discharge  
5 wastewater.

6 And they're finding that it's fairly  
7 simple and not that expensive to, and it also  
8 conserves water, to use the water over and over  
9 and then essentially evaporate it. Each cycle, as  
10 you evaporate, you can use that distilled water  
11 over and over. And then there's a solid waste to  
12 be disposed of.

13 So that system is being used on many of  
14 our power plants today. Most of our proposal --  
15 we've got some numbers, but many of the proposed  
16 power plants today come to us with that as a  
17 proposal.

18 Here we talk about it; 12 percent  
19 between '96 and 2000. There's no real difference  
20 between '96 and 2000 and today; it's just that  
21 some power plants have been licensed and others we  
22 are working on. Of the 35 percent that are  
23 currently in licensing review that have proposed  
24 ZLD, in addition to that 35 percent there are a  
25 number of power plants that as you're going

1 through the siting process, switch to ZLD  
2 especially for that one reason of they may not be  
3 able to meet the strict requirements for  
4 discharge.

5 And then depending upon the decision or  
6 what happens, we have as many as 50 to 60 percent  
7 of our power plant projects today that we're  
8 working on that will be using ZLD.

9 Once-through cooling, we've talked about  
10 once-through cooling, perpetuates water quality  
11 impacts through aquatic resources. It's an  
12 efficient cooling method, and it's an inexpensive  
13 cooling method once it's in place. And coastal  
14 facilities prefer to use that instead of  
15 switching.

16 Federal electric facilities operate --  
17 where they operate there can be significant water  
18 quality alterations. And we'll talk about that in  
19 a little more detail later. We've already talked  
20 about it.

21 On power plant projects there are  
22 recurring issues, and the issues are to reduce  
23 fresh water and groundwater for power plant  
24 cooling. In other words, water that could be used  
25 for other purposes doesn't need to be used for a



1 power plant or industrial uses, especially if  
2 there are lower quality waters around, such as  
3 reclaimed water.

4 Reclaimed water is preferred, as I  
5 mentioned earlier. What happens is periodically  
6 power plants are proposed for locations that are  
7 quite a ways away from the nearest source of  
8 reclaimed water. In which case then they often  
9 end up using fresh water, which is surface or  
10 groundwater, or possibly dry cooling, another  
11 technology, if the use of the fresh water results  
12 in significant impacts.

13 This table just gives you kind of a  
14 quick idea of the different quantities of water  
15 that are used with various cooling technologies.  
16 You see dry cooling on the bottom doesn't use very  
17 much water. Wet cooling towers use, if you go to  
18 the end, 4000 acrefeet of water. That's about  
19 what 32,000 people would use, or about 8000  
20 families of four.

21 Once-through cooling uses huge  
22 quantities of water and it destroys the life in  
23 that water in terms of entrainment. But it's not  
24 consumptive. The water's not used. It's borrowed  
25 for awhile, and it's deposited either back into

1 the same water body or another water body,  
2 depending if it's open ocean, river or bay.

3 Also issues deal with the use of the  
4 wastewater discharge that's already mentioned in  
5 zero liquid discharge systems that are commonly  
6 used today.

7 Another issue, and this has a lot to do  
8 with once-through cooling, again, we discussed it,  
9 is the need to assess and mitigate long-term  
10 impacts to aquatic ecosystems. And before we can  
11 really do that effectively we need to understand  
12 what the impacts are. And there hasn't been  
13 enough work done on what the impacts are.

14 And we talked about some of the studies  
15 that need to be done prior to licensing to help us  
16 make our decisions, or help us make  
17 recommendations for you folks to make your  
18 decisions. And we would like to see those types  
19 of requirements for studies possibly put into data  
20 adequacy requirements that are a minimum of some  
21 number of years worth of study within some number  
22 of years, maybe three years, of the proposal. So  
23 that we can make -- or we can recommend better, we  
24 can make better recommendations.

25 We'd also like to see, after these are

1 licensed, ongoing studies that will give us  
2 feedback to tell us what the impacts really are,  
3 and if we were close in our assessment. And those  
4 can be lengthy and they can be expensive, but  
5 right now we don't have anything to go on.

6 So future projections. California has a  
7 lot of people. We're headed towards 47.5 million  
8 by the year 2020. They're all going to be using  
9 water. Groundwater supplies are limited, over-  
10 drafted. It's an over-drafted resource in many  
11 parts of California.

12 Water supply reduction of 800,000  
13 million acrefeet recently in the Colorado River,  
14 bringing us back to our 4.4 that we have a right  
15 to. It's going to result in problems, and in  
16 southern California it already has.

17 We already have problems with supply  
18 meeting our demand for water, contracts for water,  
19 in terms of the federal and the state water  
20 project. And in another 10 or 15 years even the  
21 average year won't meet the water needs that we  
22 have contract for the people claim that they need.

23 Fresh water can be a constraint in power  
24 plant sitings. There's no water there, if there's  
25 too many demands for the same source of water,

1       it's going to be very difficult for power plants  
2       to use that for cooling.

3               I've got a couple graphs here, but I'll  
4       just go to the second one and kind of -- the point  
5       here is that more and more projects, prior to 1996  
6       or prior to the early '90s, are using alternative  
7       cooling like dry cooling; are using degraded water  
8       or reclaimed water. And we see this as a  
9       consistent trend and a very healthy trend.

10              Hydropower has been discussed today.  
11       Provides over 14,000 megawatts to California,  
12       about 15 percent of the state's electricity. It's  
13       very important, very beneficial, but it has costs.  
14       And those costs obviously are the costs to  
15       ecosystems, the river system and water quality  
16       flow. We talked about some of the effects,  
17       temperature, suspended solids, flow volume,  
18       dissolved oxygen, flooding; creates significant  
19       problems for things like steelhead and salmon.

20              There's movement right now, and I agree  
21       with it, to start taking a closer look at our  
22       hydroelectric facilities and see if the balance is  
23       in favor of the electricity that's produced or is  
24       it in favor of the resource that could be brought  
25       back. And this would have to be a project-by-

1 project look. Some of them are very valuable for  
2 electricity; others might have other resource  
3 values.

4 A couple kind of ideas here, issues.  
5 Should power plant applicants be required to use  
6 water conservation cooling alternatives or  
7 reclaimed water, or provide information to us or  
8 make a case for why that's not feasible. Instead  
9 of us making a case for why they should use  
10 reclaimed water, it would be easier and I think  
11 it's sensible if it was taken for granted that a  
12 lower quality water should be used for an  
13 industrial use unless it's not feasible to do  
14 that.

15 And the same way I'm looking at  
16 discharge. I think we could -- I'll read it:  
17 Should the discharge of liquid wastewater to land,  
18 groundwater or surface water, by power plants be  
19 prohibited. And should zero liquid discharge  
20 technology be required until proven infeasible.

21 I think that's the end. I'll answer  
22 questions if I can.

23 CHAIRMAN KEESE: You know, I've seen the  
24 word infeasible before. Did you work on that  
25 word, or--

1 MR. ANDERSON: No, it needs a lot of  
2 work to define.

3 CHAIRMAN KEESE: It paints it as black  
4 or white, and I think it's certainly the discharge  
5 of liquid wastewater, I don't -- clearly it's  
6 feasible to have zero liquid discharge, so I think  
7 you answer the question automatically in that one.

8 The other one, there may be some  
9 question of feasibility or not. I think probably  
10 a different standard. I think those are real good  
11 questions. I don't like the word feasible or  
12 infeasible.

13 MR. ANDERSON: We'll work on another  
14 word.

15 COMMISSIONER GEESMAN: I think I would  
16 ask whether there should be a single statewide  
17 policy in either area, or whether that policy  
18 should vary based on regions, or perhaps site-  
19 specific considerations.

20 And also ask who should set the policy.  
21 Should that be something that the Energy  
22 Commission establishes, or should we look to State  
23 Water Resources Control Board or the Regional  
24 Water Quality Control Boards for that policy. Or  
25 perhaps, at least at a minimum, for input into a

1 policy that we adopt.

2 As a parenthetical I'd ask why have they  
3 been so reluctant to establish a policy in this  
4 area up to now.

5 I guess I'd also ask whether such a  
6 policy should be a question of regulation or  
7 statute.

8 I think these are important concerns,  
9 and it's my understanding that they tend to come  
10 up in virtually every siting case. And we have,  
11 for lack of a better alternative, adopted a case-  
12 by-case adjudication of them. I'm not certain  
13 that's particularly efficient. But I'm not real  
14 clear, because I haven't had enough experience  
15 yet, to know how much opportunity there is for a  
16 broader policy than our current case-by-case  
17 practice.

18 MR. ANDERSON: Well, I agree with almost  
19 everything that you said, all of it, actually --  
20 have an example where -- haven't agreed with.

21 There is a state policy and I'll read  
22 it. It's State Water Resources Control Board  
23 resolution 7558 which we rely on. And it states  
24 that the use of fresh inland water for power plant  
25 cooling is only warranted when the use of other

1 supplies or other methods of cooling would be  
2 environmentally undesirable or economically  
3 unsound.

4 Which is kind of what this is saying.  
5 You shouldn't use fresh water if there's something  
6 else available. And if what's available is  
7 environmentally undesirable or economically  
8 unsound. Now, those are about as vague as  
9 feasible.

10 (Laughter.)

11 CHAIRMAN KEESE: No, no, you're going  
12 way beyond when you're going to feasible.

13 (Laughter.)

14 MR. ANDERSON: And we do use this. But  
15 we still have to -- and that's a case-by-case  
16 basis. But, if it was out there up front then I  
17 think that in the planning of the location of the  
18 power plant we would have power plants being  
19 planned to be associated say with a waste  
20 treatment plant, where there is readily available  
21 reclaimed water. Instead of this being proposed  
22 50 miles from the nearest waste treatment plant  
23 and they can make an easy case for economically  
24 unsound or infeasible because it's too far away,  
25 it would be too expensive.



1           And so some of these, if we're promoting  
2           a certain, say it's zero liquid discharge or the  
3           use of a lower grade water, like reclaimed water,  
4           it's helpful if the applicants are aware of that  
5           and can put that into their plans up front so that  
6           it's not difficult to try to persuade them during  
7           the process.

8           COMMISSIONER GEESMAN: Well, I think it  
9           would be preferable to be able to provide that  
10          proactive signal to the applicant. I think Mr.  
11          Powers would suggest that we ought also to include  
12          some specific prioritization between reclaimed  
13          water and dry cooling.

14          I don't think the existing policy, which  
15          is, you know, fairly old at this point, has had  
16          enough specificity to it to be as helpful to  
17          applicants in our siting process. Perhaps a  
18          reformulated more specific policy might be.

19          MR. ANDERSON: I agree.

20          COMMISSIONER BOYD: Is there, at the  
21          present time, any continuing dialogue between DWR,  
22          the Water Board and the Energy Commission on the  
23          question of water?

24          MR. ANDERSON: Bob, can you answer that?

25          Bob Haussler is more familiar with that.

1           MR. HAUSSLER: Yes, there's dialogue.  
2       Somewhat case-specific, typically. And as you  
3       know, or likely remember, the 2002 interagency  
4       meeting that was held here at the Commission with  
5       the Siting Committee, the Water Board and the  
6       other state agencies, federal agencies attended,  
7       to some extent.

8           And the conclusion of that meeting was  
9       the Board's view was that their policy, at least  
10      for now, was having the desired result, as  
11      evidenced by the progress made at the Energy  
12      Commission by requiring, when possible, the use of  
13      alternate supplies. And they saw no need for an  
14      immediate change in their policy.

15          Here at the Commission it's typically  
16      been the view, at least along Commissioner --  
17      that, you know, the Water Board does water and the  
18      Energy Commission does energy. And that works at  
19      least part of the time, sometimes most of the  
20      time. But there also seems to be a need to  
21      grapple with this in a meaningful way.

22          We certainly wouldn't suggest, as a  
23      staff, to leave the State Board behind. Now, one  
24      interesting thing that we have had discussions  
25      with them on recently has to do with their water

1 recycling program.

2 And one of the things, which in the body  
3 of our EPR, we're suggesting, although it was not  
4 brought out in the summary, is that we work with  
5 them more proactively, as in some areas that we've  
6 mentioned like with local governments, in terms of  
7 water recycling, so that some planning can be done  
8 ahead of the need for power generation siting.

9 So that local agencies make provision  
10 for in the wastewater recycling programs an  
11 expenditure of those funds available, both at the  
12 state and federal levels, to include power  
13 generation as a possibility of use, which has not  
14 been done to date. And it's kind of been done  
15 backwards. That is, they have a plant they're  
16 recycling. They think they're going to discharge  
17 it somewhere anyway. And all of a sudden a power  
18 plant comes along and then it's a question  
19 everyone has, is this going to work or whatever.

20 I think we could provide some meaningful  
21 guidance to applicants up front in the planning  
22 process of projects that could result in more  
23 progress in this area, because it's usually a  
24 change in the course of a project review where,  
25 you know, the project comes in; the staff looks

1 for alternatives because of the potential for  
2 impacts and the desire not to use fresh water,  
3 trying to be environmentally sound. Put the fresh  
4 water to its highest beneficial use.

5 And while it's not always the case that  
6 use of wastewater for power plant cooling is the  
7 highest use for wastewater, in many cases I think  
8 you will find that that is true if adequate supply  
9 is available to use in constructed facilities  
10 devoted to plants and other adjoining uses that  
11 might be possible.

12 So I guess the bottomline is that we  
13 need to work with the Board more in this regard.  
14 And we've noted that in our investigations. We've  
15 looked at what to do about this issue in an  
16 effective way.

17 By no means are we suggesting the  
18 Commission shouldn't have a policy, either an  
19 overriding guiding policy for applicant, staff and  
20 Committees as we move forward with licensing new  
21 facilities in regard to both water use, cooling  
22 and discharge. I think that's a good issue to  
23 guide.

24 COMMISSIONER BOYD: Well, I asked the  
25 question because, as you probably recall, at least

1 three years ago, as Deputy Resources Secretary, I  
2 hosted a meeting to discuss the subject. And it  
3 was concluded by the participants that the Water  
4 Board's policy was adequate. And then the Siting  
5 Committee for the Commission kind of took over the  
6 issue and went through the same cycle. And it was  
7 concluded that the Water Board policy was  
8 adequate.

9 Yet we keep having dialogue about water,  
10 water use and what-have-you. So, I just wonder if  
11 the issue truly has been adequately addressed.  
12 And as Commissioner Geesman has said that it  
13 appears there's more work to be done. Well,  
14 that's on the record now, anyway.

15 One other quick question. Degraded  
16 water versus reclaimed water. Do you use that  
17 term together and yet it sounded like the only  
18 degraded water there is, is reclaimed water. Is  
19 there any other use of quote "degraded water" for  
20 power plant cooling besides reclaimed water?

21 MR. ANDERSON: Yes. There is, for  
22 example, some agricultural return water. It's  
23 quite degraded. And that would be a good source  
24 of water to use for cooling.

25 There are other groundwater layers that

1       have more salt than is desirable for drinking, so  
2       not really drinking water quality. Depending on  
3       the size of that aquifer, that would be considered  
4       degraded water that would be a good choice for  
5       power plant cooling.

6               And we have those types of situations;  
7       and we look at those types of situations on  
8       projects as they're relevant.

9               CHAIRMAN KEESE: I would reference  
10       Blythe, I believe, which was 1000 parts per  
11       million. The water killed plants if you put it on  
12       them. And they produce the water, they clean it  
13       up and they use it. I would think that's the  
14       epitome of degraded water. It just wasn't good  
15       for anything except that.

16              MR. ANDERSON: Yeah, the Blythe water  
17       was over 1000 in total dissolved solids, which is,  
18       in some books, is called not breaking the non --  
19       the potable limit; in others it's still within the  
20       potable level.

21              But what you're saying, yeah, it's true;  
22       and there are aquifers or groundwater around the  
23       state that are lower quality than is desirable for  
24       drinking. And those are good candidates for  
25       cooling.

1           CHAIRMAN KEESE: I would say I agree  
2 with, I think, both Commissioners Geesman and  
3 Boyd. It seems to me the state has set a policy  
4 and they think that the Energy Commission is  
5 implementing it. And we're doing it on an ad hoc  
6 basis. It seems to me it would be useful to take  
7 that state policy, we don't have to change it, but  
8 we need to put it in terms that are appropriate to  
9 our siting power plants. And that could be  
10 extremely helpful to the applicants.

11           MR. ANDERSON: We agree. Any other  
12 questions or comments?

13           MR. McKINNEY: Yeah, Dick, I have a  
14 question for you. Sorry, Teresa, I'll let you go.

15           MS. DeBONO: Go ahead.

16           MR. McKINNEY: It's the same question I  
17 posed to Eileen, and I think I was, you know, as  
18 we were looking at the initial results of the  
19 water investigations, and I was -- having worked  
20 in water my whole career, I was truly horrified to  
21 find out how little data there are out there.

22           In your view, is this something we can  
23 get at just through enhanced staff resources, or  
24 maybe contractor dollars? Or, in your view, do  
25 there need to be some other changes to enable us

1 to get the water information we need to have more  
2 informed the process and the use of water for  
3 energy systems?

4 MR. ANDERSON: Well, there's a whole  
5 bunch of answers. Everything's -- there's a lot  
6 of different situations. Some of these projects  
7 simply don't track their water. You could maybe  
8 get at it by figuring out how much they're buying.

9 Water's not regulated very well, and the  
10 amounts you can use. But then if you break that  
11 down into individual amounts, there's no  
12 requirement to document what you're using for a  
13 power plant versus a Procter and Gamble plant.  
14 And we think that probably the information is  
15 available in many cases, but it's almost like we  
16 have to call each facility to find out or their  
17 water supplier.

18 And if it's the city -- if it's  
19 something that's not metered, say it's city water,  
20 or if it's irrigation district water, we think we  
21 can probably get the information if they would be  
22 willing to provide it. Sometimes they think we're  
23 prying, sticking our nose into business that, you  
24 know, -- they're suspicious of us, let's say.

25 So, it's going to be difficult, but



1 we're starting to work on it; we're starting to  
2 figure out how it is. Obviously it's going to  
3 take more resources than we have currently.  
4 Especially if we maintain a fairly heavy siting  
5 mode. If that lessens up, which it seems to be  
6 doing, at least we'll have a few more people and  
7 people hours to commit to that.

8 MS. DeBONO: I wanted to give some  
9 background information to the Commissioners on  
10 information related to power plant water quality  
11 use and regulations, and I just wanted to provide  
12 information on intake and discharge regulations  
13 that we've had to follow under the Clean Water Act  
14 and NPDES permitting provisions.

15 And we've been working on the regulatory  
16 side with EPA for many years. They've been doing  
17 extensive rulemaking in this area. And have come  
18 up with the new regulations pertaining to existing  
19 plants and new facilities. And worked extensively  
20 in evaluating what is the best technology  
21 available out there nationally.

22 And worked with also the State Water  
23 Board and the Regional Boards here in California  
24 in developing those regulations with public  
25 hearings, and extensive rulemaking.

1           So I think it is prudent to continue to  
2       allow the State Board and the Regional Boards to  
3       take the lead in this area in terms of this issue.  
4       Because they've been investigating it in depth on  
5       a national level for a very long time.

6           The other comment that I had on the  
7       water resources area was related to hydro. Some  
8       of the conclusions made in the report is the --  
9       the hydro facilities, are they operated to meet  
10      state water quality standards.

11          And what we do is we work with the State  
12      Water Boards and also with FERC to make sure our  
13      projects are operated to protect all the  
14      beneficial uses of the watershed and the water  
15      that's there. So we continue to do that.

16          We have a lot more of the 401  
17      certifications that are indicated in the report.  
18      And I realize the State Board is doing a more  
19      thorough job of it under their new regulations  
20      that were passed in 2000. So these types of  
21      issues are going to get a lot more scrutiny as we  
22      go through the licensing and the other 401  
23      certifications that we'll have.

24          But we do have, in addition to their  
25      maybe potential impacts to water quality, there's

1       also protection of beneficial uses and enhanced  
2       beneficial uses of the water by having the hydro  
3       systems there, constructing the reservoirs,  
4       providing fish and wildlife habitat.

5               So, again, I'm hoping that we can get a  
6       balanced look at the water resources impacts  
7       related to hydro.

8               So, thank you.

9               MR. POWERS: I have a couple of  
10       comments, Dick. Just take a couple minutes. Bill  
11       Powers, Border Power Plant Working Group.

12              The first are more technical detail  
13       comments related to probably under cooling  
14       technologies on page 85, or potential emergence of  
15       alternative cooling technology.

16              The comment has to do with dry cooling  
17       is mentioned, but oftentimes in the evidentiary  
18       proceedings and in hearings there are number of  
19       issues that sited with that technology that are  
20       used to reject it. And two of the most prominent  
21       are capital costs and fuel efficiency penalty.

22              And what I wanted to recommend is on the  
23       CEC website you do have a list of the projects  
24       that have been permitted in the last few years.  
25       Indicates what the project name is, capital cost,

1 megawatts. And you can readily calculate or even  
2 put on your website what the cost per kilowatt is  
3 for the project, which is in the power development  
4 business that's what you use to determine the  
5 capital cost effectiveness, really, of the  
6 project.

7 And I did run the numbers on the  
8 projects on your website. And they range anywhere  
9 from \$480 to \$700-plus per kilowatt. And the one  
10 dry project you had on the site, Otay Mesa, is not  
11 the most expensive project. It falls within  
12 range.

13 And I know that, you know, the Morro Bay  
14 hearings are recently concluded, but the issue of  
15 dry cooling was contentious in that case. But  
16 it's interesting to note that Duke Energy, which  
17 is the proponent, they do list dollars per  
18 kilowatt for their Moapa project, which is a 1200  
19 megawatt dry-cooled facility located in the very  
20 hot Nevada desert. And indicate that the dollars  
21 per kilowatt installed for that project at \$500  
22 per kilowatt. That would make it one of the most  
23 cost effective projects if it were located in  
24 California.

25 And so I think that given how dry

1 cooling takes such a beating over cost, it would  
2 be helpful for the CEC to, I don't know if the  
3 word is confront, but at least address those  
4 issues.

5 And another one that's important is this  
6 issue of fuel efficiency penalty or heat rate  
7 penalty, which is always brought up, as well, as a  
8 major demerit for dry cooling.

9 It's also important to point out that  
10 the Sutter project is a dry-cooled facility,  
11 Calpine facility. Otay Mesa is a dry-cooled  
12 facility. They were voluntarily proposed by the  
13 project developers.

14 Clearly if project developers are  
15 willing to propose voluntarily to use dry cooling,  
16 they feel they can run a profitable operation with  
17 dry cooling in the State of California. And I  
18 think that's probably the best indicator of dry  
19 cooling's overall impact on cost.

20 On the fuel efficiency issue the staff  
21 cite, in the case of Morro Bay, efficiency penalty  
22 of 1.2 percent; Sutter 1.5 percent. And in  
23 Sutter's decision dry cooling is lauded as  
24 replacing utility boilers because it is much more  
25 efficient even when using dry cooling on that type

1 of plant.

2 But I think it's also important to point  
3 out that a combined cycle gas turbine power plant  
4 designer can shift the fuel efficiency of a  
5 combined cycle power plant up with the press of a  
6 button. You have GT-PRO for the power plant,  
7 combined cycle power plant design software here at  
8 the CEC. I've used it, as well.

9 You design a combined cycle power plant  
10 for at least first cost versus maximum efficiency,  
11 you change the heat rate of the plant by 2 percent  
12 immediately. I don't think I've ever heard the  
13 CEC question designers or proponents' choice of  
14 least first cost or of maximum efficiency in your  
15 proceedings. That's just buried in the  
16 application.

17 If you go from unfired to heavily duct  
18 fired you add another 1 percent hit on the heat  
19 rate. And so with simple design changes you can  
20 swing the heat rate by 3 percent. And that's not  
21 addressed in these proceedings.

22 And it's important to keep the heat rate  
23 impact of dry cooling in context, because if  
24 you're talking about a 1 percent heat rate  
25 efficiency penalty in an environment where I can

1 change the heat rate of my facility by 3 percent,  
2 and it's not an issue for the CEC, I think that  
3 that is an important thing to understand about  
4 designing these facilities.

5 The other three elements that always  
6 crop up in this issue about wet versus dry are  
7 height, noise and footprint of the air cooled  
8 condenser.

9 And the CEC has approved large combined  
10 cycle power plants for both urban and rural  
11 settings using air cooling. Rural setting would  
12 be Sutter; the urban setting would be Otay Mesa.

13 And the designs are quite different.  
14 The urban setting air cooled condenser is  
15 optimized for low height and low noise. And I  
16 think you should point out in your document that  
17 there is a difference between how you design an  
18 air cooled condenser between a rural area and an  
19 urban area. And that low noise and low height are  
20 critical design elements. And reference the Otay  
21 Mesa as a case, so that the developers know going  
22 in that the CEC has this body of experience that  
23 they're bringing to bear when they look at the  
24 applications.

25 The other comments I'd like to make have

1 to do with the regulatory trends component of the  
2 water section. And my request would be that you  
3 would stand a little bit -- on page 98 you have  
4 regulatory trends, and it talks primarily about  
5 316(b); it doesn't talk about State Water  
6 Resources Control Board policy 7558 or some of the  
7 other issues.

8 But I do want to point out that the  
9 Border Power Plant Working Group worked for over a  
10 year, worked closely with CalEPA to get the Board  
11 of Governors, which included Governor Gray Davis,  
12 back in June of 2002, to sign a policy statement  
13 committing to conserving water in new power plants  
14 constructed in the border region whenever  
15 possible, along with three other Board of  
16 Governors and six Mexican Board of Governors.

17 And it was a great victory, actually, to  
18 work with all of these different states and two  
19 nations to get this agreement. But I do not feel  
20 that that agreement has made it down to the level  
21 of licensing decisions. I don't think it has had  
22 any impact at all.

23 And I think that -- I don't think that  
24 the Border Power Plant Working Group would invest  
25 the time and energy we did in trying to get that



1 voluntary policy statement, given the level of  
2 impact that it had.

3 But I think it would be great if you  
4 could note that in the document, because it's  
5 somewhat historic that we got all ten Board of  
6 Governors to sign off on that commitment.

7 And if I start tailing off into  
8 observations that aren't completely relevant, stop  
9 me. But, one point I wanted to make is that it  
10 seems in the licensing decisions that I've  
11 participated in, I mean there's differences  
12 between staff and the Commissioners, but that the  
13 issue of what type of cooling system we get seems  
14 to be based on kind of an amicable agreement with  
15 the applicant.

16 And the applicant's interest, tactical  
17 economic interest, seems to trump the  
18 disinterested local community interest and the  
19 strategic interest of the state. When I say trump  
20 disinterested local interest, I mean the folks  
21 that aren't getting an immediate economic benefit  
22 from the project. The people who live there, who  
23 are not going to gain any particular benefit from  
24 the power project. They're not the planning  
25 commissions, they're not the agencies that get

1 immediate permit fees, et cetera, from the  
2 project.

3 That the interests of the applicant tend  
4 to trump, and the -- I think that the issue of  
5 strategic interest was best addressed in a very  
6 similar proceeding to this two years ago that we  
7 talked about briefly, which was a workshop called  
8 water supply issues workshop summary, or the  
9 workshop was in February of 2001. The summary  
10 report was in June of 2001. The Presiding  
11 Commissioners were Commissioner Pernell and  
12 Commissioner Laurie.

13 And they came up with recommendations.  
14 And I think this was in reaction to the  
15 controversy of water and power plants with all  
16 these power plants being built. And I would like  
17 to read this recommendation, in short, for  
18 potential inclusion, or at least consideration in  
19 this document:

20 It's staff, meaning CEC Staff,  
21 recommends that the Energy Commission develop and  
22 implement a policy that requires new generation to  
23 maximize water conservation measures for power  
24 plant cooling. The State Water Resources Control  
25 Board resolution 7558 requires the evaluation of

1 alternative water supplies and/or cooling  
2 technologies.

3 "This policy, however, merely mandates  
4 the consideration of alternatives and does not  
5 prohibit the use of fresh water for cooling, even  
6 if such alternatives are readily available.

7 Therefore staff believes that this policy does not  
8 adequately address the true costs of using fresh  
9 or even potable water for power plant cooling in  
10 California.

11 "In light of California's looming water  
12 supply crisis, the use of fresh or even potable  
13 water for power plant cooling poses issues that  
14 are ignored by the economic or California  
15 Environmental Quality Act criteria used by staff  
16 in past siting cases to determine the suitability  
17 of using alternative sources of cooling water or  
18 alternative cooling technology.

19 "For example, due to the greater capital  
20 costs and efficiency penalty associated with dry  
21 cooling, the reliance on economic criteria almost  
22 always favor wet cooling and ignores long-term  
23 reliability concerns, as well as issues of  
24 protection of limited resources.

25 "The greatest emphasis in such a policy

1       should be given to the use of dry cooling because,  
2       although more expensive, dry cooling significantly  
3       reduces facilities' water demand, removes a major  
4       siting constraint and insures facility reliability  
5       during emergencies and droughts.

6               This is a pretty strong statement. This  
7       was written two years ago. I presume it was  
8       approved by the Commissioners Pernell and  
9       Commissioner Laurie. But I think that it really  
10      captures the essence of the situation in a much  
11      more detailed, but in same number of words as in  
12      the 2003 document.

13             And the only other comment I have is  
14      really on human nature, and that is that at this  
15      point in several of these licensing cases there is  
16      such divergence between the Commissioners' point  
17      of view and the point of view of what I would call  
18      the disinterested community, that the only action  
19      that's really going to be left, assuming things  
20      proceed the way they seem to be proceeding, is  
21      legal action.

22             And no one wants that. That is very  
23      draining, especially for people who have no  
24      resources. But including the project developers.  
25      And I think that the California Energy Commission

1 has always felt, rightly so, especially in the  
2 last few years, that you're under the gun to  
3 permit projects quickly so that our energy  
4 situation stabilizes.

5 The problem is that if they're permitted  
6 in a way that there are still a lot of loose ends  
7 and we're trying to get these through, that  
8 they're actually going to take quite a bit longer  
9 than they would if we were able to reach some kind  
10 of amicable solution to some of these issues, like  
11 the cooling systems, in advance.

12 This has been told to me several times,  
13 by the way, and it's definitely been told to the  
14 Commissioners, is that the developers that I've  
15 talked to will tell me flat out, there is no way  
16 we will use dry cooling on this project, no way.

17 And I thank them for taking the time to  
18 tell me that, but I've always presumed that would  
19 be the statement that they make to me. That  
20 doesn't prevent me from pursuing to the best of my  
21 ability that they eventually do use dry cooling.

22 And I think that it isn't an equal  
23 playing field. The California Energy Commission  
24 will license these facilities. It is not the  
25 position of the applicant to tell the California

1 Energy Commission what they will or will not do.  
2 If they chose to do that, that is their choice.  
3 But it seems to be reflecting itself in some of  
4 the decisions.

5 And I don't see the state in the throes  
6 of the crisis, which is quite debatable, to what  
7 extent that was due to a lack of megawatts and  
8 what was due to manipulations of the market.

9 But I did check the California ISO  
10 website last week when things were hot, our first  
11 hot spell of the summer. I was curious where were  
12 we at in terms of our peak demand and our  
13 available reserves. We peaked a little over  
14 37,000 megawatts on Thursday and Friday. We had  
15 49,000 megawatts of reserves. We actually had  
16 over a 30 percent reserve margin the last two days  
17 of last week.

18 I think your projections are correct  
19 that the summer of 2003 we're fine. 2004 we're  
20 fine. 2005 we're fine. 2006 we may need new  
21 generating assets. But what I think it means is  
22 our backs are not against the wall. We can find  
23 amicable solutions to these licensing cases. And  
24 find solutions that work for the citizens of the  
25 State of California.

1           And if merchant plant developers do not  
2   want to be, and believe me the issue is not  
3   whether the plant goes dry at Morro Bay, whether  
4   the plant goes dry at Palomar, the issue is no  
5   merchant plant developer in the United States  
6   wants to be the first developer to agree to put  
7   dry cooling on a repower at a coastal facility in  
8   the United States. No developer wants to be the  
9   first in California to voluntarily agree to put  
10   dry cooling on an inland power facility when they  
11   weren't forced to do so internally, to do it  
12   voluntarily.

13           And I see it as a game of poker; it that  
14   will continue to be that position until they are  
15   told they must do so. And one or more of them may  
16   walk. I think that's acceptable. Because there  
17   will be other developers that come in and take  
18   that project to completion and build it if they  
19   want to invest in the California market.

20           I apologize for getting a little bit on  
21   a pedestal there at -- not a pedestal, but a soap  
22   box, and I appreciate your time.

23           COMMISSIONER GEESMAN: Well, I would  
24   thank you for your comments, Mr. Powers. I do  
25   want to take some exception, though, to what you

1       said about disinterested local parties.  Because I  
2       think that in some instances dry cooling creates  
3       problems of visual impact and noise impact in the  
4       view of disinterested local parties.

5               And I do believe that there are other  
6       instances where considerations for ocean discharge  
7       of reclaimed water would create a problem for  
8       disinterested local parties that aren't quite as  
9       black and white as you sometimes characterize the  
10      case for dry cooling.

11             MR. POWERS:  I accept that.

12             COMMISSIONER GEESMAN:  Thank you.

13             MR. POWERS:  Thank you.

14             MR. KENNEDY:  I would just like to add  
15      one thing in terms of my understanding of the  
16      proceeding that you were referring to that was  
17      overseen by Commissioners Pernell and Laurie.

18             I believe, though I'm not certain, and  
19      I'll try to track down to double check this, that  
20      that is also the proceeding that Commissioner Boyd  
21      referred to that was the Siting Committee at the  
22      time looking at these questions that resulted at  
23      the end of the day in essentially a decision being  
24      made that the existing state policy was adequate,  
25      and that it was appropriate to continue to dealing



1 with the issue on a case-by-case basis.

2 That is my recollection of where that  
3 was left in terms of coming out of that proceeding  
4 on the Commissioners' side.

5 And that's, I think, a discussion that  
6 is likely to proceed over the next few months in  
7 terms of whether or not there needs to be better  
8 direction, sort of more broadly to that case-by-  
9 case decision.

10 MR. HAUSSLER: I just want to respond  
11 briefly in regards to our coordination with the  
12 Water Resources Control Board, Regional Boards, on  
13 the Clean Water Act, 316(a) and (b), related to  
14 regulations.

15 In the 316(b) process the federal EPA  
16 has developed a three-tier process for developing  
17 regulations and requesting comment. And the  
18 Energy Commission has cooperated very closely with  
19 the State Board; in fact, we joined in making  
20 comments to federal EPA. We sent individual  
21 letters and comment to both the first and second  
22 tier requirements, that is new facilities being  
23 first tier; second tier being existing facilities  
24 entrainment/impingement requirements.

25 Third tier is not at issue with the

1 Energy Commission. That's for industrial  
2 facilities.

3 So, we've been on the same page with  
4 them in regards to working with the federal EPA.  
5 And moving forward with that process, it's  
6 unfortunately been on the slow side. And there's  
7 been a number of delays. And we expect that we  
8 should see regulations in January/February  
9 timeframe '04 right now from federal EPA on  
10 existing facilities.

11 MR. KENNEDY: Do we have any further  
12 comments or questions on the water section? Okay,  
13 thank you, Dick.

14 The final section for the day is -- or  
15 the final presentation will be by Dale Edwards  
16 discussing the socioeconomics and environmental  
17 justice sections of the report.

18 CHAIRMAN KEESE: While he's doing that  
19 I'm going to make one comment for history. And  
20 that will be how the two issues of the water use  
21 and the water discharge are tied together.

22 Because as I recall the Sutter case,  
23 there was ample water and there was on problem  
24 with the use of the water. There was no ability  
25 to discharge, which had a lot to do with guiding

1 the project to dry cooling.

2 So one should just look at history in  
3 deciding what was the driving factor in these  
4 cases.

5 MR. KENNEDY: Yeah, I think we also  
6 would agree, but there was additional factor in  
7 that the local farming community was in opposition  
8 of them using the groundwater that they had  
9 originally proposed. So they changed their  
10 proposal before they submitted their application.

11 CHAIRMAN KEESE: Great.

12 MR. EDWARDS: Can everybody hear me? In  
13 the back?

14 Well, it's probably not an enviable  
15 position to be at the end of the line here, but  
16 some of what I've got to say is good news. That's  
17 the socioeconomics part, because that's one aspect  
18 of socioeconomics, as far as we see it, anyway,  
19 and it's generally true that the impacts, if you  
20 will, or the effects are generally positive. And  
21 that probably applies from -- that certainly  
22 applies to power plants as it would for most other  
23 development activities.

24 But there are some potential downsides  
25 or negative impacts. That would be if people were

1 displaced out of their homes and things like that.  
2 But I can honestly say we haven't seen that occur  
3 in the cases that I've been associated with in  
4 some 20 years plus with the Commission.

5 But what I've got here, just pop right  
6 into it, I've taken from a list of multiple  
7 summary of findings that were included in the EPR,  
8 the most notable things, in my opinion at least  
9 for presentation purposes.

10 Amongst those are of the 17 power plants  
11 that we looked at for this EPR, which is slightly  
12 more than was looked at in the 2001 EPR, which  
13 also includes peaker projects, something on the  
14 order of -- I don't recall the exact numbers, but  
15 about seven or so, and approximately ten for the  
16 combined cycle type projects. So we got a good  
17 mix of different type projects which are  
18 substantially different as far as socioeconomic  
19 impacts when it relates to like numbers of  
20 employees and such.

21 But just taken across the board with all  
22 those things added together, those 17 projects  
23 resulted in these numbers up here on the screen in  
24 megawatts and additional jobs created in the area  
25 for construction; a pretty goodly number.

1           One other point about these, since 1976  
2           or 1996, excuse me, this takes us out through  
3           December of 2002, and we've still got a little bit  
4           of adjusting to do before our final report it  
5           looks like to make sure that we've got all the  
6           numbers correct. And I was noticing earlier when  
7           we were looking at whether it be biological or  
8           other slides that were put up there, we have  
9           slightly different numbers for the same timeframe  
10          as far as megawatts.

11          And I want to make sure we -- we've been  
12          trying to coordinate that; it's been difficult.  
13          And we'll put a little more effort in that for the  
14          final.

15          The 125 operation jobs, and then capital  
16          costs of \$1.5 billion over that five-year  
17          timeframe. And we continue to go on from there,  
18          of course, with new projects that are still  
19          inhouse.

20          One of the most notable things that's  
21          come up, and this, again, is kind of an across-  
22          the-board, which includes the peaking projects as  
23          well as the combined cycle type projects, is that  
24          the ratio of employment, direct peak employment  
25          for construction versus the operational side has

1 changed quite a bit over this pre-1996 to post-  
2 1996 period.

3 And one possible explanation, it's  
4 probably a pretty good reason, but it may not be  
5 the only or the overlying reason, is the energy  
6 crisis. The need to get power plants up online  
7 quicker rather than an 18-month construction  
8 schedule, perhaps it's a 12-month or in some cases  
9 a less-than-12-month that we've seen in some  
10 cases.

11 And certainly the applicants have wanted  
12 to get started on construction very quickly after  
13 certification in a number of cases. But we've  
14 also had the cases for profitability reasons where  
15 we've had projects that have been certified,  
16 started construction relatively quickly, and then  
17 ceased construction for a period of time waiting  
18 for a more opportune time to start generating  
19 electricity profit-wise.

20 In the last up here is that effective  
21 as of this last January the Board of Equalization  
22 began assessing the privately owned electric  
23 generation facilities that are over 50 megawatts.  
24 And these are also the ones that are not QF  
25 facilities or cogeneration, which have remained

1 with the local agencies.

2 I did hear one comment earlier in one of  
3 the presentations that someone from the public  
4 made regarding basically secondary impacts of the  
5 construction workers or whoever is involved with  
6 the project, buying the lunches in the local  
7 cafeterias and cafes and such. And I just wanted  
8 to make note of the fact that these secondary  
9 impacts and induced indirect type impacts are  
10 included. There's a discussion of that in the  
11 current EPR section for socioeconomics.

12 That's all I have to say about  
13 socioeconomics, because we don't have what I would  
14 consider to be issues in that area. Other than  
15 the fact I would point out that in the development  
16 of the EPR section this year, we found a  
17 substantial lack of information, immediately  
18 gatherable information, at least, to complete a  
19 lot of the work that we were trying to do.

20 And as far as looking at the whole  
21 system, what we'd like to do at some point in time  
22 in the future, have this master database about  
23 energy facilities and all the things that are  
24 related to them, whether it be emissions or  
25 property taxes paid in a particular year.

1           That's something that's worth looking at  
2     in the future, and it's something we have our eye  
3     on. But we weren't able to accomplish that in a  
4     lot of ways in this EPR, as you're well aware, I'm  
5     sure.

6           Moving over on the environmental  
7     justice, it's notable that the Energy Commission  
8     was one of the two state agencies that started off  
9     doing environmental justice as a regular part of  
10    our work, when it relates to environmental impact  
11    assessment, at least. Caltrans is the other one,  
12    which has been connected with federal agencies --  
13    or is connected with federal agencies, whereas  
14    we're not as much as they are. So they've had --  
15    when the executive order occurred back in 1998 or  
16    '94, they jumped on it quicker than we did.

17          But as of about 1995 with the San  
18    Francisco Energy Project, we started with  
19    environmental justice work, as well, and have done  
20    so ever since with every project that's come  
21    before us.

22          One of the notable events as far as  
23    demographics in California's concerned is as of  
24    this last census 2000, it's the first time that  
25    minority peoples, which are people of color, not



1       so much their numerical numbers, of course,  
2       comprised a majority of the population in the  
3       state.

4               They're now up to -- it's in the EPR  
5       report, but we jumped from, I think, 43 percent  
6       minority to 53 percent, if my memory serves me.

7               For the EJ community involvement in  
8       siting cases, and that's during siting cases I'm  
9       speaking to specifically here, that for the most  
10      part the involvement that we've had on the  
11      communities' part, and you can specify that  
12      further and say environmental justice communities'  
13      part, has largely been in the Los Angeles and San  
14      Francisco areas.

15              We have had some issues pop up in other  
16      areas such as in the Pittsburg area where after  
17      the siting case issues were raised about  
18      environmental justice, but they weren't raised so  
19      much during the case. Likewise the Blythe case,  
20      we've had some issues pop up in that either very  
21      very late in the siting and almost beyond the  
22      siting case.

23              So there are some other notable  
24      exceptions to that. But Los Angeles and San  
25      Francisco are the most notable cases where we have

1 a lot of community involvement, at least where the  
2 projects that happened, or been proposed in areas  
3 where there's already existing emissions or toxic  
4 type inventory release points.

5 Between 1996 and 2000 we did have an  
6 increase, well, power plants have been sited by us  
7 in that timeframe between '96 and 2000, about 50  
8 percent of them have been proposed in areas where  
9 the population percentage is greater than 50  
10 percent. That's compared to prior to 1996 which  
11 the percentage of population minority-wise for  
12 those projects was around 15 percent.

13 So that kind of is an indication again  
14 about the change in demographics that's occurred  
15 over the last ten years and greater.

16 COMMISSIONER GEESMAN: Do you have any  
17 sense with respect to the plants that are below  
18 our 50 megawatt threshold of what this percentage  
19 would look like if you extended the generalization  
20 to include all electric generating plants that  
21 have been brought online since 1996?

22 MR. EDWARDS: I really don't have any  
23 information on that. Not even a hint of it. I  
24 can guess at it, but it ought to be very similar  
25 to what we're finding as far as the change in pre-

1 96 to post-96. And you can --

2 COMMISSIONER GEESMAN: Do we have  
3 locational data on those smaller plants?

4 MR. EDWARDS: There is locational data.  
5 It's not something that we looked at specifically  
6 for the EJ EPR section this time.

7 COMMISSIONER GEESMAN: How hard to do  
8 would that be?

9 MR. EDWARDS: Well, I think we can  
10 certainly get to the county level relatively  
11 quickly. And perhaps city, as well. That type of  
12 information is readily available. The kind of  
13 information we're providing here relates to our  
14 usual six-mile radius around --

15 COMMISSIONER GEESMAN: Yeah.

16 MR. EDWARDS: -- the projects we deal  
17 with. But we can talk about, with a listing of  
18 projects that identifies the city or the county  
19 they're in. Pull up some 2000 census data very  
20 rapidly.

21 COMMISSIONER GEESMAN: Why don't you  
22 register that as a curiosity I have.

23 MR. EDWARDS: It would be nice to kind  
24 of raise that as a juxtaposition in the EPR.

25 COMMISSIONER GEESMAN: Yeah.

1           MR. EDWARDS: We'd be able to do that on  
2 a text box method, just to look at a variety of  
3 large counties, perhaps, and show how it's working  
4 out for them versus our whole state picture.

5           And then moving on, what I've put  
6 together here is just a few ideas that kind of  
7 indicate some thing that the Commission might want  
8 to consider doing in the future.

9           We have a process now inhouse for  
10 dealing with environmental justice during siting  
11 cases, and I didn't want to run through a whole  
12 description of that in the definition of  
13 environmental justice and other things.

14          But just to give you an idea that during  
15 the siting cases we definitely do consider  
16 environmental justice. It kind of blends in very  
17 well with the CEQA process that's got to be  
18 certainly used. Because we do a lot of outreach  
19 in our process; that's a key component of  
20 environmental justice programs or approaches.

21          We also incorporate -- we've got the  
22 outreach to the public; we try to incorporate them  
23 or bring them into our process so we can hear the  
24 concerns.

25          But one of the things about our process

1 is that it's happening ongoing as we're in the  
2 works. And some of the ideas that have come up  
3 from a couple, or one case in particular I'll hit  
4 on in a moment. But I wanted to get on these  
5 second and third bullets perhaps here.

6 Kind of trying to move the environmental  
7 justice process, considered at least, moving it a  
8 little bit more forward into the process, rather  
9 than waiting until the site is already selected  
10 and then we talk about now who lives there and  
11 what are the impacts and all that, to try to move  
12 that forward in the process a little bit. And  
13 I've got some other thoughts on that that I'll get  
14 into in a moment that go beyond these.

15 But starting off with the first bullet,  
16 we have a case, I mentioned the Pittsburgh case, or  
17 a couple Pittsburgh cases we've had in the past.  
18 And one of the issues that came up somewhat  
19 belatedly from our process, was there are 13 power  
20 plant projects in this strip of 10 mile long, or  
21 13 mile long land.

22 And at the time we were doing our  
23 analysis we're looking at individual power plants,  
24 and we certainly do a cumulative impact analysis,  
25 but usually looked at the ambient condition and

1       then add on our project and any foreseeable future  
2       projects.

3               One of the concerns that the public has  
4       in various situations, certainly when you have  
5       multiple power plants, is, you know, what is that  
6       cumulative impact in real terms, not perhaps the  
7       way we look at it.

8               But what this question is actually going  
9       at is not even thinking of EJ in the sense of  
10      public health impact, which I think rightfully so  
11      is where EJ has to be couched, but it comes at it  
12      from another angle. And that is to say is the  
13      mere fact that you have more than one, or more  
14      than three power plants in your immediate  
15      vicinity, is that a disproportionate impact.

16              We've not gone there to date, but it's a  
17      question that's been raised on occasion. And so I  
18      thought I would throw it into this for thinking  
19      about.

20              And regarding these points here and also  
21      some others I'm going to mention here in a moment,  
22      just pointing out that each of these ideas are  
23      things that are not recommendations as far as the  
24      EPR at this point, of course. They are things I  
25      think that, at least from my perspective, we can

1 start talking about internally to see whether some  
2 of these changes should be -- should we move in  
3 this direction or not.

4 I wanted to point out that regarding the  
5 second bullet here, that one of the ways to get at  
6 requiring developers to do this work, as discussed  
7 here, is to add to our data adequacy requirements  
8 that they provide information on these kind of  
9 activities, if we decided to do that.

10 And the other point is that we're  
11 talking about preliminary design or EJ-focused  
12 workshops, the key point of those is another item  
13 that's been discussed in the EJ communities, or  
14 their concerns, is to help design mitigation  
15 that's proposed for a project.

16 So, it's not always to stop a project,  
17 although that's certainly some of the issues that  
18 we've heard in various cases, but then certainly  
19 we'd like to get involved in helping to design or  
20 select what the mitigation, in their opinion, what  
21 the appropriate mitigation that is used for the  
22 project.

23 And in some cases the EJ communities  
24 feel that they're not having an opportunity to do  
25 that at this point in time. So these are ways to

1 consider maybe opening up the process a bit to  
2 help them feel like their voices are being heard.

3 A couple other possibilities which are  
4 not on slides, I'm just going to read these off,  
5 would be for the Commission to establish a  
6 database of demographic and pollution levels for  
7 areas that have multiple power plants in TRI or  
8 toxic sites.

9 This would allow us to help developers  
10 see where they may have a problem; locations that  
11 they might, if they consider it, they're going to  
12 have additional mitigation to consider. And kind  
13 of an extension of that would be another option of  
14 establishing a database of demographic and local  
15 area pollution level data for selected areas of  
16 the state to provide to developers to assist them  
17 in their site selection process.

18 So this is in, rather than areas with  
19 local projects that we kind of look at, we just  
20 kind of do a -- select some areas of the state  
21 where we think are likely candidates for future  
22 power plant development and do some upfront work  
23 looking at the demographics as well as the  
24 emission levels that are the ambient conditions in  
25 those areas. And provide that information to



1 potential developers up front or at regular points  
2 in the year or years, so that we're proactive  
3 again. Whether they use the information or not is  
4 their choice, but it's a possibility that we can  
5 consider doing something like that.

6 Another one would be holding prefiling  
7 workshops with the applicant and community members  
8 to discuss preliminarily proposed projects, the  
9 proposed project potential environmental impacts  
10 and potential mitigation.

11 That's a little bit far-fetched,  
12 perhaps, because it is so early in the process  
13 staff would not have even looked at an  
14 application; and the applicant certainly has a lot  
15 to say about whether they want to get out and talk  
16 about a project that early or not, as well.

17 One other item that I think we do have  
18 under our control, even though it's something that  
19 comes down from the federal government, as far as  
20 the guidance that we receive as far as  
21 environmental justice, about the greater than 50  
22 percent is the threshold we use, all states use,  
23 for what is an EJ population, where we are  
24 supposed to do something in addition to what we  
25 would otherwise do.

1           In this case as we've just been talking  
2           about here, we've got a population that is - the  
3           minority is the majority. And it's the only state  
4           in the nation that is like that, to my knowledge.

5           It may be appropriate for the Energy  
6           Commission, and perhaps a larger group of state  
7           agencies, perhaps under the OPR guidance, to talk  
8           about changing, for California purposes, that  
9           greater than 50 percent threshold to a higher  
10          number, whatever that may be I'm not going to  
11          suggest here. But it may be appropriate to do so.  
12          We're a different kettle of fish out here.

13          And that concludes my presentation.  
14          Thank you. Do you have any questions?

15          COMMISSIONER BOYD: I was wondering with  
16          regard to the data suggestion you had, not one of  
17          the unpublishable, I was wondering other agencies  
18          in some areas might not already begin to have --  
19          begun to have acquired that data. Some of the air  
20          districts have been a little aggressive in the  
21          environmental justice area. They may have the  
22          demographic data you talked about; the State Air  
23          Board may have that. Some of the COGs may have  
24          that. It may not be as hard as it sounds. I  
25          don't know how far we'd look.

1           MR. EDWARDS:  It's just a matter of  
2     collecting it.  I'm not saying it's not readily  
3     available.  I know that, trying to remember the  
4     name of the South Coast Basin study very recently  
5     that brought together a lot of, pinpointed the  
6     areas that had the worst concentrations of various  
7     pollutants.

8           And it's easy to tack the population  
9     demographics onto that and come up with a kind of  
10    a, well, whatever kind of listing you want to put  
11    it into, whether tranche order or otherwise, just  
12    data to distribute so that others -- I mean we  
13    don't even have to do that.  It's available to  
14    people to do it, themselves.  But it's a matter of  
15    being proactive again.

16          MR. KENNEDY:  Any other questions or  
17    comments relating to the socioeconomics or  
18    environmental justice?

19          Well, I would like to thank the  
20    speakers.  We had a lot of good presentations.  
21    Also want to see whether the Commissioners or  
22    anyone else has any final sort of over-arching  
23    comments and suggestions as we move forward  
24    towards trying to finalize this document and move  
25    on from there.

1           COMMISSIONER BOYD: Seeing nobody racing  
2       to the microphone, I would just say for all of us,  
3       and to thank you for the amount of work that I  
4       know went into this report, thank the members of  
5       the audience and those who took their time to come  
6       and speak today, for participating. It's been an  
7       extremely interesting subject area to absorb  
8       information today.

9           I thank everybody for their help. And  
10      commend the staff to carry on, make that final  
11      report.

12          CHAIRMAN KEESE: Thank you for the  
13      clarity of presentation. I thought it was  
14      excellent.

15          MR. McKINNEY: Yeah, if I could, just in  
16      closing here, I'd like to acknowledge somebody who  
17      really hasn't gotten a lot of credit for this  
18      report cycle, but we did not get an instruction  
19      booklet from the Legislature when we got the  
20      direction to start doing these reports.

21          And Chris Tooker has now moved on to be  
22      working for Commissioner Geesman, but he really  
23      provided a lot of the initial oversight and  
24      leadership on both the 01 and the first part of  
25      the 03 reports before he transferred over to your

1 shop. But I don't think he gets quite the  
2 recognition that is deserved, so thanks, Chris.

3 MR. KENNEDY: And I think with that  
4 we're done for the day. Thank you very much,  
5 everyone.

6 (Whereupon, at 3:31 p.m., the workshop  
7 was adjourned.)

8 --o0o--

## CERTIFICATE OF REPORTER

I, ALAN MEADE, an Electronic Reporter,  
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